Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

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AND
SECTION II - GENERAL STUDY REPORTS

WESTERN CANADA HEALTH MANPOWER TRAINING STUDY

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STUDY EXECUTIVE SUMMARY

Province of
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WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

This study has been prepared by Peat, Marwick and Partners, under the direction of the Western Canada Health Manpower Training Study Steering Committee.

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WESTERN CANADA - HEALTH MANPOWER TRAINING STUDY

STUDY EXECUTIVE SUMMARY

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WESTERN CANADA - HEALTH MANPOWER TRAINING STUDY

INTRODUCTION

The purposes of the study are to

assess the existing and future need for health manpower training programs and facilities in western Canada;

make recommendations on the rationalization of the location and funding of health manpower training programs and facilities in western Canada.

In addition, the study objectives included a review of existing health manpower planning actitivies, methods and organization at both the western regional and provincial levels.

During the study, we projected the manpower requirements for, and future supply of, practitioners in twenty-nine health occupations (see Appendix B), over a twenty-year time frame. The quality and quantity of data available for each occupation varied; consequently, we developed alternative scenarios for each occupation based on different sets of assumptions. The projections are sensitive to changes in these assumptions. The training recommendations are based on what we have identified as the most likely scenario.

FINDINGS

This study has resulted in a number of findings which may influence future health care manpower strategies in western Canada. Although, the study terms of reference focus exclusively on future training strategies, it is apparent that training in isolation will not ensure an adequate future supply of health care workers. Other manpower strategies including recruitment and labour force retention, must be developed to supplement training initiatives.

MANPOWER SUPPLY

The projection of manpower supply and requirements for each occupation has resulted in a number of different manpower situations which will require different training solutions. These projected western Canada regional manpower situations and the appropriate training response are discussed below. It should be noted, however, that specific provincial manpower situations may vary from the overall regional situation.

Occupations with Projected Surplus of Practitioners

There are twelve occupations with a projected surplus of practitioners. These are:

Physician	Provincial Training Response Recommended
Dentist	
Dental Laboratory Technician	
Dental Hygienist	

Orthotist Prosthetist Audiologist Health Records Administrator Health Records Technician	Regional Training Response Recommended
Chiropractor Ophthalmic Dispenser Optometrist Podiatrist	No Training Response Recommended

It should be noted that the projected surplus of optometrists in western Canada is after 1990.

Occupations with Requirements for Additional Practitioners

There are fifteen occupations with requirements for additional practitioners. These are:

Dental Mechanic Dental Nurse Dietician Registered Nurse Psychiatric Nurse Nursing Assistant Occupational Therapist Physiotherapist Medical Laboratory Technologist Respiratory Technologist X-Ray Technician	Provincial Training Response Recommended

Chiropodist Public Health Inspector Speech Pathologist	Regional Training Response Recommended
Optometrist	No Training Response Recommended

It should be noted that the requirement for optometrists in western Canada is in the period 1981-1990.

Occupations in Balance

There are two occupations where the projected manpower supply balances the projected manpower requirements. These are:

Dental Assistant Pharmacist	Provincial Training Reponse Recommended

Provincial training remains an appropriate response for the majority of occupations, and recommendations for changes to existing provincial training are contained in occupation specific reports, and in the Executive Summaries for each category. This Executive Summary concentrates on the recommended regional training initiatives.

Core Health Care Occupations

The occupations reviewed in this study represent a broad cross-section of health care manpower. The potential impact on the health care system of either a shortage or surplus of practitioners varies by occupation.

Certain health care professions are central to the provision of a health care system. These would include those occupations primarily concerned with direct care (Physicians, Nurses, Dentists and diagnostic personnel). To a degree these occupations control the scope of the health care system, and the availability of manpower will influence the overall utilization and cost of the health care system.

Based on the study findings there is a potential oversupply of physicians and dentists, and a significant requirement for additional nursing manpower in western Canada. Training strategies for these professions should be given priority.

PROJECTED SURPLUS OF PHYSICIANS AND DENTISTS

Although physicians and dentists have traditionally been in short supply, increased training outputs and gains from migration and immigration have resulted in a situation where there is a projected surplus of practitioners at both the western Canada regional level and at the national level. Traditionally, these practitioners have a high degree of mobility, and there is a limited opportunity to reduce this surplus at the provincial level through reductions in provincial training outputs. Decisions taken by one province on the reduction or maintenance of training outputs will affect the supply in other provinces. Consistent regional and national initiatives should be taken to control the surplus situation for dentistry and medicine, and alternative methods should be developed to limit migration and immigration into areas or provinces with an oversupply of practitioners.

REQUIREMENT FOR ADDITIONAL PRACTITIONERS

The major manpower requirements are in the female dominated occupations, including the nursing professions. It is significant to note that the nursing occupations account for approximately 70% of the health care workers in western Canada. There is a high rate of labour turnover for these occupations, and coupled with the requirements resulting from the increased population base in western Canada, this results in a need to increase the supply of practitioners in these occupations.

CHANGING POPULATION FACTORS

In the forecast period used for projections for this study, (1981-2000), the population is projected to increase by 40% by the year 2000. This projection assumes a slight increase in fertility rates, and the increased rate of migration into Alberta and British Columbia is assumed to continue. In addition, the general population will be aging, and this will have an impact on the health care needs and manpower requirements of the region. This trend towards an aging population will have the most significant impact in the second decade of the 21st century (beyond the forecast period for this study). There will be, however, a number of effects of an aging population over the next twenty years that will partially dictate the appropriate health care strategies and the related manpower requirements. This will include greater emphasis on long term and chronic care, and an increased emphasis on prevention of diseases.

IMPACT OF TECHNOLOGY

Historically, technology and improved productivity have been considered an alternative to increasing the supply of practitioners. While there will be major developments in the technology of diagnostic testing and information processing in the health care industry, it is questionable whether these innovations will have any major affect on the future requirement for these practitioners. The increased emphasis on prevention, long term and chronic care and on the quality of care may result in minimal productivity increases in those occupations which traditionally employ the majority of health care workers.

Summary of Findings

Future health manpower training strategies must focus on the provincial, regional and national levels. This study has shown that there are a number of manpower situations that will require regional and national training initiatives. In addition, there are other manpower strategies that should be developed to ensure an adequate supply of health manpower. At present, health manpower planning is constrained by an absence of key planning information, and by the failure to provide an effective link with strategic health care planning. This report makes recommendations in each of these areas.

REGIONAL TRAINING STRATEGIES

THE DEVELOPMENT OF A REGIONAL TRAINING MECHANISM

The population base in western Canada is sufficiently large to support complex educational delivery systems at both the provincial and regional level. Traditionally, the educational system has been limited in its ability to develop training programs for occupations for which there is a limited requirement for qualified practitioners. The cost of program design, development and the on-going direct program costs, and indirect overhead costs, has often made it uneconomic to develop specific occupational skill training programs at the provincial level for those occupations with limited manpower requirements. Regional training, however, enables the development of training programs to serve a greater population base and for the sharing of program costs.

To date the concept of western regional training facilities and resources has not been fully developed. There is no formalized process to recognize specific training programs or institutions as regional training resources, and no adequate funding mechanism has been developed to share the cost for regional training. Regional training programs in western Canada are recommended as a preferred means for ensuring the supply of health care professionals for a number of occupations. The following recommendations are presented to assist in the development of a regional training strategy.

Recommendation 1

> That the Premiers of the four western provinces formally endorse the concept of regional training programs for selected health care occupations.

Recommendation 2

That formal bilateral training contracts be concluded between the host province(s) and the province(s) placing students in the program(s).

Recommendation 3

That all program development costs (inclusive of capital costs), all on-going program costs, on-going administrative and operating overhead costs be shared on the basis of the proportion of training places allocated to each province for any interprovincial training undertaken.

Recommendation 4

That formal training contracts be negotiated for a minimum period of five years with renewal options of five years, for any interprovincial training undertaken.

REGIONAL TRAINING RECOMMENDATIONS

The following regional training recommendations are presented. Appendix C provides brief occupational definitions for those occupations for which regional training strategies are appropriate.

CHIROPODY

At present podiatrists are legislated to provide foot care in Alberta and British Columbia, and chiropodists are legislated to provide basic foot care in Saskatchewan and Manitoba. The training recommendations have been based on the assumption that the introduction of a two tier system of foot care is desirable, and that a decision to implement this approach to foot care will be adopted in the future. Under this two tier system basic palliative foot care would be provided by chiropodists. It should be noted, however, that the development of this system will require changes to existing legislation in British Columbia and Alberta.

Recommendation 5

That one training program in Chiropody be established in western Canada to provide the required manpower.

Recommendation 6

That this training program be established in any one of the 13 college level institutions located either in British Columbia or Alberta which currently offer a basic registered nurse training program, subject to appropriate changes in legislation.

AUDIOLOGY

Recommendation 7

That the program in Audiology at the University of British Columbia be designated the western Canada program responsible for training audiologists.

PROSTHETICS AND ORTHOTICS

Recommendation 8

That the program in Prosthetics and Orthotics at British Columbia Institute of Technology be designated the western Canada program responsible for training prosthetists and orthotists.

PUBLIC HEALTH INSPECTION

Recommendation 9

That the British Columbia Institute of Technology (B.C.I.T.) be designated the western Canada school responsible for certificate level public health inspection education.

Recommendation 10

That one four year degree program in public health be developed for western Canada with an annual intake of approximately 20 students.

Recommendation 11

That the degree program be located in an institution with health science degree granting status located in either British Columbia or Alberta.

HEALTH RECORDS

Recommendation 12

That the provinces of Saskatchewan and Manitoba contract training places in the administrator training program in either British Columbia or Alberta

Recommendation 13

That the University of Victoria be designated the western Canada school responsible for training health information science personnel.

SPEECH PATHOLOGISTS

Recommendation 14

> That the University of Alberta be designated the university responsible for training speech pathologists for Alberta, Saskatchewan, and Manitoba.

TRAINING FOR OPTOMETRISTS

There is an immediate need for additional optometrists to offset an anticipated high rate of retirement in western Canada within the next ten years. After 1990, however, there is the potential for a limited surplus of optometrists in western Canada. Increased training will not solve the manpower requirements for the 1980's. Even if training intakes were increased immediately, the results would not be realized until the late 1980's because of the four year program time and the additional time required to establish and develop a practice. Consequently, the requirement for optometrists in western Canada in the 1980's will have to be met in other ways. This study has reviewed the need for a School of Optometry in western Canada, as an alternative to the current training agreements with the School of Optometry at the University of Waterloo, and the Province of Ontario. Based on a continuation of the existing method of providing primary vision care, the establishment of a School of Optometry is not justified.

Scenarios for Changing Service Patterns

At present the role and scope of practice of opththalmology and optometry overlap in the provision of primary vision care. There are two scenarios which form the basis for determining the most appropriate training arrangements for optometrists in western Canada.

The first scenario assumes a continuation of the status quo in the provision of vision care. Under this scenario there is a minimal requirement for additional optometrists, and this does not justify the establishment of a School of Optometry in western Canada.

The second scenario is based on a redefinition of the role of the optometrist, ophthalmologist and ophthalmic dispenser in the provision of vision care services, which eliminates the overlap in functions of these occupations. This scenario would require a number of policy decisions and directions from the funding agencies and the limitation of payments for each level of practitioner for an appropriate range of services. Under this assumption it would be necessary to reduce the supply of ophthalmologists and increase the number of optometrists. In order to achieve an optimal manpower level for optometrists it would be necessary to train approximately 25-30 optometrists per year. This is the only scenario that would justify the establishment of a western Canada School of Optometry.

Recommendation 15

> That, based on the continuation of the status quo in the provision of vision care services, no school of optometry be established in western Canada.

Recommendation 16

> That the western provinces actively recruit optometrists from outside of western Canada during the 1980's, and provide financial incentives for practitioners to locate in under serviced areas.

Recommendation 17

> That the provincial governments in western Canada undertake a review of the provision of vision care services to determine and develop policy directions to form the basis for future training strategies.

SUPPLEMENTARY MANPOWER STRATEGIES

THE LIMITATION OF TRAINING AS AN OVERALL MANPOWER STRATEGY

Although the study recommendations indicate an increase in training output for a number of occupations, alternative and supplementary manpower strategies must also be adopted to ensure an adequate supply of health occupational manpower in the future.

It is unlikely that increased training outputs alone will meet the projected manpower requirements for health care occupations in western Canada. The health care sector will be competing with other sectors of the economy for high school graduates to enter post-secondary training programs. In 1980, approximately 19% of the population of western Canada was in the age group 14-24, and represented a potential pool for training for the labour force. By 1990, it is projected that this age group (14-24) will represent only 14.25% of the population.

Historically, the health occupation workforce has been dominated by female workers, and approximately 80% of the health care workers in western Canada are female. It is now generally accepted that a number of alternative career options are available for female workers in professions which traditionally have not attracted females. In addition, health care occupations are considered to be of limited attractiveness to many high school graduates. This image in part reflects the nature of the work, including shift work, and the relative compensation levels in relation to other segments of the economy.

It is therefore unreasonable to expect the post-secondary education system to produce the required number of graduate health care workers. In addition, the cost of training these students would prove prohibitive.

Consequently, alternative supplementary manpower strategies must be developed to ensure an adequate supply of manpower for the health care system in the future, such as the development and implementation of recruitment and retention strategies.

CHARACTERISTICS OF HEALTH OCCUPATIONAL WORKFORCE

Part-Time Working

In recent years there has been a significant trend towards part-time work in the health care occupations, and this trend may constrain the future supply of health manpower. Little research has been undertaken, however, to quantify the impact of part-time working in health care occupations and there is little reliable historical data on the pattern of hours worked. The future trend of part-time working is difficult to determine and should be monitored carefully to assess the potential long-term implications for manpower supply.

There appear to be two conflicting economic factors which may influence the trend towards part-time working. The potential for high interest rates, and long-term inflation could result in part-time workers increasing the number of hours worked. This increase in hours may be further encouraged by increased emphasis on the provision of day-care facilities, work sharing and variable shift arrangements. The net effect of these interventions is to assist part-time employees to remain in the workforce or to increase the number of hours worked. This increase may be partially offset, however, by a tendency to develop target income expectations, and to reduce the number of hours worked as salary levels increase. For the purposes of this study these two trends have been considered to balance each other and no change has been projected in part-time participation rates. Any increase in the number of part-time workers, or any reduction in the number of hours worked would result in additional manpower requirements.

Labour Turnover

The female dominated health occupations have a pattern of labour turnover which is significantly different from other female dominated occupations. The period of time spent in active employment in female health occupations is short. While specific data on the period of time spent in the active workforce is limited for the health care occupations, it is known that a large proportion of health care workers leave active employment each year. In the course of this study, a range of occupations have been reviewed and no common trend has emerged. As a result of the lack of specific data, estimates have been used to quantify labour turnover. These estimates range from periods of ten to twenty years in active employment for health care occupations, (5%-10% annual labour turnover).

Inactive Practitioners

Estimates have been obtained from professional associations on the size of the inactive workforce for each of the occupations reviewed in this study. It is generally believed that there is a relatively large "pool" of inactive practitioners in most of the female dominated occupations. These inactive practitioners represent a potential source of manpower for the western region. At present, however, little is known about the relative size, composition and location of the inactive workforce. There is limited understanding of the various factors which contribute to decisions to leave the active workforce, or of the changes in employment patterns that will be required to attract inactive practitioners back into the workforce.

At present, the governments of the four western provinces are investing in refresher training programs for registered nurses. There are significant manpower requirements in other female occupations and the ability to attract inactive workers back into the workforce is essential. The rapid rate of technological change (new equipment and processes) may tend to limit the potential for inactive workers to re-enter the workforce. Governments should provide technical assistance to develop refresher training mechanisms for several other health care occupations.

SUPPLEMENTARY MANPOWER STRATEGIES

Alternative supplementary manpower acquisition strategies include the development and implementation of recruitment and retention strategies to counteract the short period of time that the average female health care worker spends in the workforce. To date the majority of these efforts have addressed employment, social and economic factors through such measures as increased salaries, improved benefit packages, provision of child care and flexible hours of work and schedules. The effects of these types of recruitment/retention strategies have not been adequately studied to determine their effectiveness in extending the period of time spent in the workforce. In addition, it is necessary to address educational and organizational factors which effect the retention of health care workers and contribute to the period of time spent in the workforce. Educational and organizational factors include the availability and accessability of continuing education opportunities, the use of discretionary decision making in work tasks and adequate opportunity for professional career growth.

RECOMMENDATIONS

Recommendation 18

> That provincial government health manpower planners be directed to monitor the trend in part-time working and labour force turnover to develop data to be used in assessing the impact of these factors on the future supply of manpower.

Recommendation 19

That provincial government health manpower planners in western Canada be directed to conduct and co-ordinate pilot projects to assess which types of short and long-term recruitment and retention strategies will be most successful in extending the period to time in the active workforce.

Recommendation 20

That research into alternative strategies focus on health manpower educational and organizational factors affecting recruitment and retention of health care occupational workers.

Recommendation 21

That the four western provinces provide technical assistance in developing additional mechanisms to facilitate refresher training to allow inactive practitioners to return to the active workforce.

HEALTH MANPOWER PLANNING PROCESS

THE LIMITATION OF CURRENT HEALTH MANPOWER PLANNING PROCESSES

In each of the four western provinces there is basic data on current and historical health manpower occupation strengths. To date, manpower planning activities have concentrated on developing this basic statistical base as a first step in the manpower planning process.

The overall effectiveness of the health manpower planning process has been constrained by inadequate planning information, and by a tendency to isolate manpower planning from strategic health care planning. These two issues are discussed below.

Inadequate Planning Information

There is an absence of key planning information for the major health occupational manpower groups. No adequate measures have been developed to accurately estimate the size of the inactive labour force, and there is little quantative information on the period of time spent in the active workforce. In addition there is limited historical or current information on the pattern of hours worked by part-time employees. The absence of these data results in a level of subjectivity which limits the overall effectiveness of the planning process.

Inter-Relationship of Manpower Planning and Strategic Health Care Planning

The separation of manpower planning activities from health care planning and health care policy/strategy definition has limited the effectiveness of health manpower planning in western Canada. As a result, manpower planning has tended to use basic approaches which identify immediate manpower needs requiring short term responses and strategies rather than examining and quantifying the long term manpower programs to meet these needs.

Effective manpower planning requires a long term perspective linking manpower needs to health care strategies. There is currently no adequate vehicle for the development of long term health care strategies and related manpower strategies at the regional level in western Canada. Therefore a new inter-provincial mechanism is needed to perform this function.

A MECHANISM TO LINK MANPOWER PLANNING AND TRAINING

There should be an adequate mechanism to link the manpower planning process and the development of training strategies for health occupations. The Western Canada Health Manpower Requirements Sub Committee of the Western Canada Post Secondary Co-ordinating Committee, should continue to concentrate on examining the training initiatives required to meet the projected manpower requirements. It is anticipated that a linkage would be established by membership in this committee. The committee should be composed of representatives from the provincial government manpower planning units, and from the Education departments and ministries. This would continue the existing membership in the Committee.

Recommendation 22

> That there be greater emphasis on manpower planning as a component in health care planning systems.

Recommendation 23

> That there be a greater emphasis on the definition of long term health care strategies and the related manpower needs.

Recommendation 24

That the organizational placement of manpower planning activities be at a senior level with responsibility for health care policy decisions.

Recommendation 25

That a new inter-provincial Committee be established (to be named the Western Canada Health Care Planning Committee), to recommend long range health care strategies and to assess the implications of these strategies on health manpower needs.

Recommendation 26

That membership in this committee be composed of deputy ministers, and that strategic planners and manpower planners in the respective departments of government responsible for the provision of health and social services form a working group to this committee.

Recommendation 27

That the mandate of the existing Western Canada Health Manpower Requirements Subcommittee of the Western Canada Post-Secondary Co-ordinating Committee be restricted to the determination of training responses to meet the identified needs for health manpower. In keeping with this limited mandate, this subcommittee should be re-named the Western Canada Health Manpower Training Subcommittee.

APPENDIX A - SUMMARY OF RECOMMENDATIONS

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SPECIFIC REGIONAL TRAINING RECOMMENDATIONS

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APPENDIX B - OCCUPATIONS REVIEWED

Audiologist
Chiropodist
Chiropractor
Dental Assistant
Dental Hygienist
Dental Laboratory Technologist
Dental Mechanic
Dental Nurse
Dentist
Dietician
Health Records Administrator
Health Records Technician
Medical Laboratory Technologist
Nursing Assistant
Occupational Therapist
Ophthalmic Dispensing
Optometrist
Orthotist
Pharmacist
Physician
Physiotherapist
Podiatrist
Prosthetist
Psychiatric Nurse
Public Health Inspector
Registered Nurse
Respiratory Technologist
Speech Pathologist
X-Ray Technician

APPENDIX C - OCCUPATIONAL DEFINITIONS

The following brief occupational definitions are provided for the occupations for which regional training strategies are appropriate.

PODIATRY/CHIROPODY

Occupational Role

Podiatrists and chiropodists both provide foot care, although the training and scope of practice of each occupation differs. Chiropodists provide basic treatment of foot disorders using non-surgical procedures. Podiatrists diagnose and treat conditions of the foot by medical, surgical and other methods.

Western Canada has not developed a compatible approach to the delivery of foot care services. British Columbia and Alberta recognize only podiatrists, while Saskatchewan and Manitoba allow the two disciplines to practice, but restrict podiatrists to the same scope of practice as chiropodists.

AUDIOLOGIST

Occupational Role

An audiologist provides diagnostic evaluation and rehabilitative services and conducts research related to hearing. These diagnostic tests are used to evaluate response patterns to differentiate between organic and non-organic hearing loss. The audiologist plans, directs and participates in counselling, speech reading and other rehabilitation programs.

Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

EXECUTIVE SUMMARY

CATEGORY # 1 OCCUPATIONS

- Optometry
- Chiropractic
- Podiatry/Chiropody
- Prosthetics/Orthotics
- Ophthalmic Dispensing

and

HEALTH MANPOWER PLANNING IN WESTERN CANADA

EXECUTIVE SUMMARY - CATEGORY I OCCUPATIONS

This study has been prepared by Peat, Marwick and Partners, under the direction of the Western Canada Health Manpower Training Study Steering Committee.

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EXECUTIVE SUMMARY

CATEGORY #1 OCCUPATIONS
AND
HEALTH MANPOWER PLANNING IN WESTERN CANADA

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EXECUTIVE SUMMARY

I. INTRODUCTION

The provision of effective health services to the community is dependent on three resources: an adequate supply of well trained staff; adequate facilities; and the availability of sufficient funds to ensure an effective health service. The recent expanded range and complexity of health treatment programs and increased requirement for skilled, adequately trained health practitioners have resulted in an increased emphasis on manpower planning and skill training to ensure an adequate supply of trained practitioners.

The primary purpose of this study is to assess the existing and future needs for health care training programs and facilities in western Canada and to make recommendations on the rationalization of the location and funding of health manpower training programs and facilities in western Canada.

The study consists of a review of 26 health occupations. The occupations have been grouped into categories in order of priority based on the current availability of training programs in western Canada. This report reviews the first category of five occupations for which no training programs exist in western Canada:

- Optometry
- Chiropractic
- Podiatry/Chiropody
- Ophthalmic Dispensing
- Prosthetics/Orthotics.

In addition to the review of the above health occupations, the study includes a review of the existing health manpower planning activities, processes and organization at both the western regional and provincial level. The results of this review of the organization and manpower planning process are discussed, and recommendations for improvements at the regional and provincial levels are presented.

II. OCCUPATIONS IN CATEGORY I

A. OPTOMETRY

Occupational Role

Optometrists conduct eye examinations and prescribe corrective lenses, preventive devices or visual training to preserve or restore maximum efficiency of vision. Optometric services overlap with ophthalmological and ophthalmic dispensing services, and conflicts have developed over professional jurisdiction. The current role and scope of optometric practice is defined and regulated through provincial legislation. In this study, discussion of optometry has been restricted to the currently legislated role.

Current Situation

There is no training program for optometry in western Canada. Alberta, Saskatchewan and Manitoba have an agreement with the Government of Ontario and the School of Optometry, University of Waterloo, for training places in their optometry program. British Columbia has not identified a need to contract training places.

Findings

There is an immediate need for additional optometrists to offset an anticipated high rate of retirement in western Canada within the next ten years. The most significant additional manpower need is in the Province of Alberta. After 1990 there is the potential for a limited surplus of optometrists in western Canada. Increased training will not present an immediate solution to the manpower requirement for the 1980's. Even if training intakes were increased immediately, the results would not be realized until the late 1980's because of the four year program time and the additional time required to establish and develop a practice. Consequently, the need for optometrists in western Canada in the 1980's will have to be met in other ways.

The most probable manpower projection indicates a surplus of optometrists by the 1990's. It has been determined that any recommendation on the establishment of a school of optometry is to some degree dependent on the results of the analysis of the manpower supply and need for ophthalmologists in western Canada. There is an immediate need, however, to deal with the short-term requirement for additional optometrists in western Canada.

RECOMMENDATIONS

1. **That any decision on the establishment of a school for optometry in western Canada be deferred until the completion of the study of ophthalmologists in Category 5.**

2. **That the western provinces actively recruit optometrists from outside western Canada during the 1980's.**

3. **That Alberta, where the major manpower need is greatest, increase the number of contracted training places in the optometry program at the University of Waterloo by two (2) places per year, or if these places are not available, establish a bursary program for two (2) individuals to study in a school of optometry in the United States, for a period of five years.**

B. CHIROPRACTIC

Occupational Role

Chiropractors adjust the spinal column to treat disorders of the human body, believed to be caused by interference of the nervous system. The practice of chiropractic in Canada is under the direct regulatory control of provincial legislation. The various provincial licensing bodies are responsible for maintaining standards of practice. Within the context of the Worker's Compensation Boards and the provincial Health Insurance programs, chiropractors provide an alternative to other forms of medical treatment. Chiropractors, however, do not see themselves as an intrinsic component in the medical model, but as a viable alternative for certain categories of health problems.

Current Situation

The Canadian Memorial Chiropractic College in Toronto, Ontario, is the only Canadian institution offering formal education in chiropractic. The four western provinces provide no financial support to the college, or to the individuals attending the college.

Findings

Although the demand for chiropractic services has increased in the last ten years, the supply of practitioners has matched this increase. A surplus of chiropractors is projected during the forecast period (1981 - 2000). In addition, the indication from Ontario and the United States (potential sources of chiropractors for western Canada), is that the supply of chiropractors will exceed their requirements during this period.

RECOMMENDATIONS

4. **That no training program in chiropractic be established in western Canada.**

C. PODIATRY/CHIROPODY

Occupational Role

Podiatrists and chiropodists both provide foot care, although the training and scope of practice of each occupation differs. Chiropodists provide basic treatment of foot disorders using non-surgical procedures. Podiatrists diagnose and treat conditions of the foot, by medical, surgical and other methods.

Western Canada has not developed a compatible approach to the delivery of foot care services. British Columbia and Alberta recognize only podiatrists, while Saskatchewan and Manitoba allow the two disciplines to practice, but restrict podiatrists to the same scope of practice as chiropodists.

Current Situation

There are no training programs for foot care personnel in western Canada. Podiatrists are trained in the United States, and chiropodists are trained in the United Kingdom. The George Brown College of Applied Arts and Technology in Toronto is currently developing a program to train chiropodists. The Government of Saskatchewan has stated its intention to introduce a foot care program in the future.

Findings

In the projection period, western Canada will have an aging population requiring enhanced foot care. The optimal way to meet this need is to institute a two-tier foot care system in which specialized medical foot services are provided by podiatrists or the medical profession, and basic foot care is provided by chiropodists. Other foot care strategies are more costly, and the projections for foot care personnel needs in the forecast period have been based on the assumption that a two-tier foot care system will be established in western Canada. Based on this approach, there is a potential surplus of podiatrists and an immediate need for chiropodists in western Canada. Moreover, as a result of the interrelationship of components of the chiropody program with components of nurse training, any training program in chiropody should be located in a college which currently offers nurse training programs.

RECOMMENDATIONS

5. **That no training program in podiatry be established in western Canada.**

6. **That one training program in chiropody be established in western Canada to provide the required manpower.**

7. **That this training program be established in a college level institution, either in British Columbia or Alberta, which currently offers a basic registered nurse program. Potential sites in British Columbia are: Cariboo College, Okanagan College, British Columbia Institute of Technology, Douglas College, Selkirk College, Vancouver Community College (Langara Campus), Camosun College and College of New Caledonia. Potential sites in Alberta are: Grant MacEwan Community College, Medicine Hat College, Mount Royal College, Red Deer College, and Lethbridge Community College.**

8. **That all program costs be based on the proportion of training places allocated to each province (British Columbia 40.0%; Alberta 36.7%; Saskatchewan 13.3%; and Manitoba 10.0%).**

9. **That an interprovincial training agreement be established for a minimum period of five years.**

D. OPHTHALMIC DISPENSING

Occupational Role

Ophthalmic dispensers fit, adjust and dispense eye wear. The role and scope of practice for ophthalmic dispensers is usually defined and regulated through provincial legislation. Legislation currently exists in Alberta, Saskatchewan, and Manitoba and is currently being developed in British Columbia.

Current Situation

There are no formal training programs for ophthalmic dispensers in western Canada. Several years of on-the-job training are received, supplemented by a two-year correspondence course under the control of the Canadian Guild of Dispensing Opticians.

Findings

A surplus of ophthalmic dispensers is projected throughout the forecast period (1981 - 2000). While the manpower needs will be met in western Canada, there are limitations in the current correspondence approach to training. This suggests that an innovative training approach is required.

RECOMMENDATIONS

10. **That no college-based training program for ophthalmic dispensing be established in western Canada.**

11. **That a review of current training methods and materials be conducted with consideration given to alternative training approaches, including audio-visual and video training.**

E. PROSTHETICS/ORTHOTICS

Occupational Role

Prosthetists provide artificial limbs. Orthotists provide supports or braces. The certified orthotist or prosthetist takes part in rehabilitation programs by assisting with both pre-surgical planning and advising on post-surgical management by preparing the most suitable appliances. The certified orthotist/prosthetist is responsible for the orthotic/prosthetic device, a selection of all components, the appropriate use of materials, the cosmetic appearance, and the quality and fit of the device to the patient. In addition, the certified orthotist/prosthetist provides supervision and support for the orthotic and prosthetic technician, and conducts internship training for orthotic and prosthetic technicians.

Current Situation

The only program in western Canada to train prosthetic and orthotic technicians was established at British Columbia Institute of Technology in September, 1980. British Columbia, Alberta, and Saskatchewan place students in the program. Manitoba has not contracted training places. Subsequent to graduation, technicians are required to work for an additional two years prior to certification.

Findings

There is a limited requirement for additional certified prosthetists and orthotists until 1985 and a potential surplus after this date.

RECOMMENDATIONS

12. **That enrolment in the program for prosthetics and orthotics at the British Columbia Institute of Technology not be increased above the present level.**

13. That the supply and needs for certified orthotists and prosthetists be monitored to control program enroiments and minimize surplus manpower.

III. HEALTH MANPOWER PLANNING IN WESTERN CANADA

Current Situation

In each of the four western provinces there is basic data on current and historical manpower levels by occupation. To date, manpower planning activities have concentrated on developing the statistical base as a first step in the manpower planning process. Detailed analyses have generally been restricted to problem occupations posing either immediate or ongoing problems (e.g., physician or nursing manpower).

The separation of manpower planning activities from health care planning and health care policy/strategy definition has limited the effectiveness of health manpower planning in western Canada. As a result, manpower planning has tended to use basic approaches which identify immediate manpower needs requiring short-term responses, rather than examining and quantifying the long-term manpower implications of health care strategies.

The Western Canada Health Manpower Requirements Subcommittee, a subcommittee of the Western Canada Post-Secondary Coordinating Committee, currently coordinates health manpower planning in western Canada. This subcommittee determines the training needs for health personnel and recommends educational and training programs to meet these needs.

Findings

Effective manpower planning requires a long-term perspective linking manpower needs to health care strategies. There is presently no adequate vehicle for the development of long-term health care strategies and related manpower strategies at the regional level in western Canada. Therefore, a new interprovincial mechanism is needed to perform this function.

RECOMMENDATIONS

14. **That there be greater emphasis on manpower planning as a component in health care planning systems.**

15. **That there be a greater emphasis on the definition of long-term health care strategies and the related manpower needs.**

16. **That the organizational placement of manpower planning activities be at a senior level with responsibility for health care policy decisions.**

17. **That a new interprovincial Committee be established (to be named the Western Canada Health Care Planning Committee) to stimulate the development of long-range health care strategies and to assess the implications of these strategies on health manpower needs.**

18. **That membership in this committee be composed of deputy ministers, and that strategic planners and manpower planners in the respective departments of government responsible for the provision of health and social services form a secretariat to this committee.**

19. **That the mandate of the existing Western Canada Health Manpower Requirements Subcommittee of the Western Canada Post-Secondary Coordinating Committee be restricted to the determination of training responses to meet the identified needs for health manpower. In keeping with this limited mandate, this subcommittee should be re-named the Western Canada Health Manpower Training Subcommittee.**

IV. PROVINCIAL HEALTH MANPOWER PLANNING

A. BRITISH COLUMBIA

Current Situation

The Health Manpower Working Group is responsible for health manpower planning in British Columbia. It is composed of the Assistant Deputy Ministers from the Ministry of Health, the Ministry of Education, the Ministry of Universities, Science and Communications and the Ministry of Labour. The Health Manpower Research Unit, Division of Health Services Research and Development, University of British Columbia, acts as a secretariat to the Working Group. The representatives from the Ministry of Labour provide liaison with the Manpower Needs Committee, the provincial coordinating mechanism in the manpower field. The Working Group also provides liaison with two other bodies, the British Columbia Health Association and the Education Health Advisory Committee, which have input into the health manpower planning process. The funding for university and college training programs is controlled by lay councils.

The Health Manpower Research Unit maintains a manpower data base of 28 occupational groups. It has also developed the General Manpower Stock Simulator Model (GMSS), a computer model for projecting health manpower supply for physicians and dentists (and any other occupational group if data are sufficient), and for analyzing the effects of policy options on supply and distribution of manpower.

Health manpower requirements are estimated using manpower ratios, surveys of difficult-to-fill positions, institutional vacancy surveys, medical service utilization, and periodic graduate follow-up surveys.

The Health Manpower Research Unit also conducts special surveys of health agencies to determine current and future manpower requirements for specific occupations.

Findings

The interaction of various manpower planning groups at the government and association level is relatively complex. The involvement of lay councils in the allocation of funds results in a complicated process of training program approval and establishment of enrolment quotas. The basic manpower planning processes are adequately developed, although there is a need to develop a model of manpower requirements to supplement the supply model (GMSS).

RECOMMENDATIONS

20. That the Health Manpower Research Unit continue to coordinate and control all research into health manpower and review the terms of reference for all research projects in health manpower.

21. That the role, definition, responsibility and terms of reference of each of the parties involved in the manpower planning process for health occupations be reviewed by the Minister of Health.

22. That a review be undertaken of the complex process for training program approval by the various councils which control funding and the ministries which control program development.

23. That the Ministry of Education and the Ministry of Universities, Science and Communications be given greater control of the level of enrolment to allow for increases or reductions in the number of students entering specific training programs, in order to more effectively meet health manpower requirements.

24. That a model be developed for manpower requirements to supplement the supply model (GMSS).

25. That consideration be given to a regular follow-up survey of graduates.

B. ALBERTA

Current Situation

The Alberta Health and Social Services Disciplines Committee is an interdepartmental group responsible for coordinating the provincial government's manpower activities for health and social service personnel. The departments represented on the committee are Social Services and Community Health, Hospitals and Medical Care, and Advanced Education and Manpower. An informal relationship exists between the Disciplines Committee and the Alberta Manpower Committee, the coordinating group for manpower matters. Provision is also made for input from professional associations, health services agencies, and educational institutions. The role of the committee is to advise the Ministers and Deputy Ministers of the three departments on health and social service manpower issues and to coordinate manpower planning activities of the three departments. The committee is supported by a secretariat composed of members from Social Services and Community Health, Advanced Education and Manpower, and Hospitals and Medical Care.

The Planning Secretariat of Advanced Education and Manpower develops information to assist in long-term planning of post-secondary education and manpower, and is currently working with the secretariat of the Disciplines Committee in upgrading the health occupations component of the provincial manpower forecasting model. In addition, Social Services and Community Health has a Manpower Planning Unit, and Hospitals and Medical Care is currently developing a manpower planning capacity in the Research and Strategic Planning Branch.

The Secretariat of the Alberta Health and Social Services Disciplines Committee collects data on health and social service manpower and training programs. The Department of Hospitals and Medical Care and the College of Physicians and Surgeons of Alberta jointly maintain the Alberta Physicians Data Bank. The two basic methods used to estimate manpower requirements are employment surveys and manpower ratios.

Findings

The current membership of the Alberta Health and Social Services Disciplines Committee is not representative of the major users of health manpower. The rudimentary procedures for manpower planning are developed. There is, however, a serious deficiency in the lack of a forecasting model for estimating manpower needs. There is also a deficiency in the current manpower supply information that is collected (for example, age distribution, migration, registration, etc.).

RECOMMENDATIONS

26. That a health manpower planning unit be established in the Research and Strategic Planning Branch of the Policy Division, Hospitals and Medical Care, and be adequately staffed to provide a manpower planning capability in this department.

27. That the membership of the Health and Social Services Disciplines Committee should be expanded to include representatives from the Hospitals Services Division of the Department of Hospitals and Medical Care; it should also include representatives from the Mental Health Services Division, the Rehabilitation Services Division, and the Research and Planning Division of the Department of Social Services and Community Health.

28. That more input be solicited from professional associations and employee groups and that task forces including members from these associations and employee groups be used to review specific manpower subjects.

29. That the Alberta Health and Social Services Disciplines Committee Secretariat coordinate and control all provincial government research into health manpower issues and review the terms of reference for provincial government research projects into health manpower.

30. That Advanced Education and Manpower have greater control of the level of enrolment to allow for increases or reductions in the number of students entering specific training programs, in order to more effectively meet health manpower requirements.

31. That a model be developed for long-range health manpower forecasting.

32. That regular graduate follow-up surveys be implemented.

33. That the Medical Insurance Commission Data Base System be used more extensively for service utilization analysis.

34. That the coverage of the employer's survey be expanded.

35. That basic data on current manpower levels be expanded to include data from the associations on registrations, and consideration be given to developing a cooperative data base maintained by government and associations.

C. SASKATCHEWAN

Current Situation

The Interdepartmental Committee on Health Manpower Education is the formal mechanism for health manpower planning in Saskatchewan. The Department of Continuing Education and the Department of Health are represented on the committee. The Department of Northern Saskatchewan has responsibility for health manpower in the northern part of the province.

The role of the Interdepartmental Committee on Health Manpower Education is the development of policy with regard to health sciences education and manpower in the province, including the monitoring of manpower requirements and the output of provincial health manpower training programs. The policy planning and research activities are carried out by the planning and research groups in the respective departments.

The Health Services Branch, Department of Northern Saskatchewan, provides health services to non-treaty residents in the northern part of the province.

The Health Manpower Division within Saskatchewan Health provides basic data on the number and distribution for each manpower occupation. This is based on the annual registration of professional associations and on information from the health manpower monitoring system. Manpower requirements are established by the health manpower monitoring system, surveys of technical institute graduates and manpower ratios.

Findings

The Health Services Branch, Department of Northern Saskatchewan, has not been involved in health manpower planning, and there is no formal coordinating mechanism between this Branch, and the Departments of Health and Continuing Education. The basic procedures for manpower planning are adequately developed, although there is a need to develop a forecasting model for health manpower supply and requirements.

RECOMMENDATIONS

36. That a formal process be developed to ensure liaison on manpower planning activities between the Department of Health and the Department of Continuing Education, and the Department of Northern Saskatchewan.

37. That the Province develop a forecasting model for health manpower supply and requirements.

38. That the follow-up surveys be expanded to cover university students.

D. MANITOBA

Current Situation

The Research Branch of the Department of Health has the major provincial responsibility for health manpower planning. There is no formal committee for integrating health and education departments, although various work groups and informal committees review health manpower issues.

The informal manpower committee consists of representatives from the Department of Health, the Community Colleges Division, Department of Education, and the University Grants Commission who meet frequently to review health manpower issues, including supply, mobility, attrition, training and legislation.

The Research Branch, Department of Health, is responsible for developing and maintaining a provincial health manpower data base, and for identifying health manpower needs, demands, supply and training outputs.

The Department of Health data base is developed and updated annually, in conjunction with professional associations and licensing bodies. The Research Branch uses the functional data on physician utilization from the Manitoba Health Services Commission. The supply projections for dentists, registered nurses and physicians are produced using the General Manpower Stock Simulator (GMSS) through the Health Manpower Research Unit, University of British Columbia. The Research Branch estimates requirements for health manpower using manpower ratios, and vacancy surveys.

Findings

There is currently no identified mandate or terms of reference for the informal manpower committee in Manitoba. The rudimentary procedures for the collection of data on current manpower levels are adequate. There is, however, a need to develop a model for estimating health manpower requirements and for estimating supply of those occupations not covered by the General Manpower Stock

Simulator (GMSS). For those occupations not covered by the GMSS, there is a need to develop a supply model incorporating information on age distribution, migration rates and registrations.

RECOMMENDATIONS

39. That formal terms of reference be developed for the manpower committee.

40. That Manitoba develop a forecasting model for estimating health manpower requirements.

41. That greater use be made of follow-up surveys of graduates.

42. That the Manitoba Health Services Commission data base be used more extensively in manpower planning.

V. SUMMARY OF GENERAL RECOMMENDATIONS

Optometry

1. That any decision on the establishment of a school for optometry in western Canada be deferred until the completion of the study of ophthalmologists in Category 5.

2. That the western provinces actively recruit optometrists from outside western Canada during the 1980's.

3. That Alberta, where the major manpower need is greatest, increase the number of contracted training places in the optometry program at the University of Waterloo by two (2) places per year, or if these places are not available, establish a bursary program for two (2) individuals to study in a school of optometry in the United States, for a period of five years.

Chiropractic

4. That no training program in chiropractic be established in western Canada.

Podiatry/Chiropody

5. That no training program in podiatry be established in western Canada.

6. That one training program in chiropody be established in western Canada to provide the required manpower.

7. That this training program be established in a college level institution, either in British Columbia or Alberta, which currently offers a basic registered nurse program. Potential sites in British Columbia are: Cariboo College, Okanagan College, British Columbia Institute of Technology, Douglas College, Selkirk College, Vancouver Community College (Langara Campus), Camosun

College and College of New Caledonia. Potential sites in Alberta are: Grant MacEwan Community College, Medicine Hat College, Mount Royal College, Red Deer College, and Lethbridge Community College.

8. That all program costs be based on the proportion of training places allocated to each province (British Columbia 40.0%; Alberta 36.7%; Saskatchewan 13.3%; and Manitoba 10.0%).

9. That an interprovincial training agreement be established for a minimum period of five years.

Ophthalmic Dispensing

10. That no college-based training program for ophthalmic dispensing be established in western Canada.

11. That a review of current training methods and materials be conducted with consideration given to alternative training approaches, including audio-visual and video training.

Prosthetics/Orthotics

12. That enrolment in the program for prosthetics and orthotics at the British Columbia Institute of Technology not be increased above the present level.

13. That the supply and needs for certified orthotists and prosthetists be monitored to control program enrolments and minimize surplus manpower.

Health Manpower Planning in Western Canada

14. That there be greater emphasis on manpower planning as a component in health care planning systems.

15. That there be a greater emphasis on the definition of long-term health care

strategies and the related manpower needs.

16. That the organizational placement of manpower planning activities be at a senior level with responsibility for health care policy decisions.

17. That a new interprovincial committee be established (to be named the Western Canada Health Care Planning Committee) to stimulate the development of long-range health care strategies and to assess the implications of these strategies on health manpower needs.

18. That membership in this committee be composed of deputy ministers, and that strategic planners and manpower planners in the respective departments of government responsible for the provision of health and social services form a secretariat to this committee.

19. That the mandate of the existing Western Canada Health Manpower Requirements Subcommittee of the Western Canada Post-Secondary Coordinating Committee be restricted to the determination of training responses to meet the identified needs for health manpower. In keeping with this limited mandate, this subcommittee should be re-named the Western Canada Health Manpower Training Subcommittee.

VI. SUMMARY OF PROVINCIAL HEALTH MANPOWER PLANNING RECOMMENDATIONS

British Columbia

20. That the Health Manpower Research Unit continue to coordinate and control all research into health manpower and review the terms of reference for all research projects in health manpower.

21. That the role, definition, responsibility and terms of reference of each of the parties involved in the manpower planning process for health occupations be reviewed by the Minister of Health.

22. That a review be undertaken of the complex process for training program approval by the various councils which control funding and the ministries which control program development.

23. That the Ministry of Education and the Ministry of Universities, Science and Communications be given greater control of the level of enrolment to allow for increases or reductions in the number of students entering specific training programs, in order to more effectively meet health manpower requirements.

24. That a model be developed for manpower requirements to supplement the supply model (GMSS).

25. That consideration be given to a regular follow-up survey of graduates.

Alberta

26. That a health manpower planning unit be established in the Research and Strategic Planning Branch of the Policy Division, Hospitals and Medical Care, and be adequately staffed to provide a manpower planning capability in this

department.

27. That the membership of the Health and Social Services Disciplines Committee should be expanded to include representatives from the Hospitals Services Division of the Department of Hospitals and Medical Care; it should also include representatives from the Mental Health Services Division, the Rehabilitation Services Division, and the Research and Planning Division of the Department of Social Services and Community Health.

28. That more input be solicited from professional associations and employee groups and that task forces including members from these associations and employee groups be used to review specific manpower subjects.

29. That the Alberta Health and Social Services Disciplines Committee Secretariat coordinate and control all provincial government research into health manpower issues and review the terms of reference for provincial government research projects into health manpower.

30. That Advanced Education and Manpower have greater control of the level of enrolment to allow for increases or reductions in the number of students entering specific training programs, in order to more effectively meet health manpower requirements.

31. That a model be developed for long-range health manpower forecasting.

32. That regular graduate follow-up surveys be implemented.

33. That the Medical Insurance Commission Data Base System be used more extensively for service utilization analysis.

34. That the coverage of the employer's survey be expanded.

35. That basic data on current manpower levels be expanded to include data from the associations on registrations, and consideration be given to

developing a cooperative data base maintained by government and associations.

Saskatchewan

36. That a formal process be developed to ensure liaison on manpower planning activities between the Department of Health and the Department of Continuing Education, and the Department of Northern Saskatchewan.

37. That the Province develop a forecasting model for health manpower supply and requirements.

38. That the follow-up surveys be expanded to cover university students.

Manitoba

39. That formal terms of reference be developed for the manpower committee.

40. That Manitoba develop a forecasting model for estimating health manpower requirements.

41. That greater use be made of follow-up surveys of graduates.

42. That the Manitoba Health Services Commission data base be used more extensively in manpower planning.

Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

EXECUTIVE SUMMARY
CATEGORY # 2 OCCUPATIONS

- Dental Laboratory Technician
- Dental Mechanic
- Dental Nursing
- Public Health Inspection

EXECUTIVE SUMMARY - CATEGORY II OCCUPATIONS

EXECUTIVE SUMMARY

CATEGORY #2 OCCUPATIONS

- Dental Laboratory Technician
- Dental Mechanic
- Dental Nurse
- Public Health Inspector

This study has been prepared by Peat, Marwick and Partners, under the direction of the Western Canada Health Manpower Training Study Steering Committee.

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EXECUTIVE SUMMARY

CATEGORY #2 OCCUPATIONS

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EXECUTIVE SUMMARY

I. INTRODUCTION

The provision of effective health services to the community is dependent on three resources: an adequate supply of well trained staff; adequate facilities; and the availability of sufficient funds to ensure an effective health service. The recent expanded range and complexity of health treatment programs and increased requirement for skilled, adequately trained health practitioners have resulted in an increased emphasis on manpower planning and skills training to ensure an adequate supply of trained practitioners.

The primary purpose of this study is to assess the existing and future needs for health care training programs and facilities in western Canada and to make recommendations on the rationalization of the location and funding of health manpower training programs and facilities in western Canada.

This study consists of a review of 26 health occupations. The occupatons have been grouped into 5 categories in order of priority based on the current availability of training programs in western Canada. This report reviews the second category of four occupations, for which a limited number of training programs exist in western Canada:

- Dental Laboratory Technician
- Dental Mechanic
- Dental Nursing
- Public Health Inspection.

II. OCCUPATIONS IN CATEGORY #2

A. DENTAL LABORATORY TECHNICIAN

Occupational Role

Dental laboratory technicians make and repair dentures and other dental devices under the prescription of a dentist. Dental laboratory technician services overlap with those services provided by dental mechanics, and to a somewhat limited extent, by dentists.

Current Situation

There are three formal training programs in western Canada for dental laboratory technicians. The Vancouver Community College, Vancouver Vocational Institute offers both pre-apprentice and apprentice level training, and the Northern Alberta Institute of Technology offers a two year certificate program. The Winnipeg Technical Vocational High School offers an option in the final two years of the high school program.

Findings

There is a potential surplus of manpower during the projection period. The current role and scope of dental laboratory technicians is defined and regulated through provincial legislation. The provinces of British Columbia and Alberta have a formal examining body which tests both the practical and theoretical knowledge of those persons wishing to be designated as a registered dental technician. Saskatchewan has legislation controlling the licensing of practitioners, and Manitoba has a definition and enabling legislation which has never been implemented. In these latter two provinces, the major issue is not the number of practitioners, but rather the quality of work performed by them. The factors indicate the need for an upgrading and skills training program to enhance the level of expertise of practitioners in these two provinces.

RECOMMENDATIONS

1. That an effective method be developed by the employers and professional associations to control the numbers admitted into apprenticeships for dental laboratory technicians in British Columbia.

2. That there be no increase in the number of student enrolments in the two year certificate program at the Northern Alberta Institute of Technology.

3. That the provinces of Saskatchewan and Manitoba, where feasible, jointly develop skill upgrading modules.

4. That these skill upgrading modules be presented at Wascana Institute of Applied Arts & Sciences and at Kelsey Institute of Applied Arts & Sciences in Saskatchewan, and at Red River Community College in Manitoba.

5. That the program development costs be shared on an equal basis by the provinces of Saskatchewan and Manitoba, conditional on the ability to jointly develop modules.

6. That the ongoing operational and administrative costs and initial capital costs specific to a province be borne by that province (i.e. Saskatchewan or Manitoba).

7. That the respective Governments of Saskatchewan and Manitoba provide finanical aid to those practitioners undertaking skill upgrading programs.

B. DENTAL MECHANIC

Occupational Role

Dental mechanics design, construct, fit and repair complete dentures. In addition, in the province of Saskatchewan, the dental mechanic may, subject to additional licensing requirements, provide partial dentures. By virtue of being permitted to deal directly with the public, the dental mechanic may be considered to be in direct competition with the dentist in the provision of denture services.

Current Situation

The Northern Alberta Institute of Technology offers the only certificate level training for this occupation in western Canada. The province of Saskatchewan has entered into a training agreement with the province of Alberta, and provides bursaries to three students annually to attend the dental mechanic program at N.A.I.T. In British Columbia, the Vancouver Community College, Vancouver Vocational Institute offers pre-apprentice and apprentice level training for dental mechanics.

Findings

There is a limited requirement for approximately 30 additional practitioners at the regional level by the year 2000. In the province of Saskatchewan, there is a potential surplus of dental mechanics based on the assumption of continued output of 3 practitioners per year from the program at N.A.I.T.

RECOMMENDATIONS

8. That an effective method be developed by the employers and professional associations to control the numbers admitted into apprenticeships for dental mechanics in British Columbia.

9. That the current enrolment level for the province of Alberta at N.A.I.T. not be increased.

10. That the province of Saskatchewan reduce the number of contracted training places at N.A.I.T. by 1 place (from 3 to 2) at the conclusion of the existing training agreement.

11. That Manitoba enter into a interim training contract with the Government of Alberta for two training places annually in the dental mechanic program at N.A.I.T. and that this agreement terminate simultaneously with the existing training contract between Alberta and Saskatchewan.

12. That the terms of the interim training contract between the provinces of Alberta and Manitoba be similar to those in the existing training contract between Alberta and Saskatchewan.

13. That at the time of re-negotiation of the training agreement between Saskatchewan and Alberta, a new basis for cost sharing based on the proportion of training places be introduced.

14. That under the new bilateral training agreement between Alberta and the provinces of Saskatchewan and Manitoba, program costs be shared on the following basis: Alberta 66%, Saskatchewan 17%, and Manitoba 17%.

C. DENTAL NURSE

Occupational Role

The dental nurse, an expanded duty dental auxiliary, is trained to prepare and restore cavities in children's teeth, extract primary teeth and provide routine preventive dental services. This practitioner is currently only licensed to practice in the provinces of Saskatchewan and Manitoba. Typically, the dental nurse works in the provincial school system under the indirect supervision of a dentist. At this time, dental nurses are not legislated to practice in British Columbia and Alberta, and it has been assumed that there is sufficient capacity in the existing dental services to provide coverage to the child and adolescent population in these provinces, and that dental nurses will not be employed in the future.

Current Situation

The only program for training dental nurses in Canada is at the Wascana Institute of Applied Arts & Sciences, in Regina, Saskatchewan.

Findings

There is an immediate surplus of dental nurses in the province of Saskatchewan. As a result of the phased introduction of the Saskatchewan Plan, this surplus will be absorbed into the labour force by the year 1985. After this date, based on the continuation of current output levels from the training program at Wascana Institute, there is an indicated requirement for additional dental nurses in Saskatchewan.

The future operation of the Manitoba Children's Dental Program is currently under review. For purposes of projecting future manpower requirements, it has been assumed that the current level of services provided by the dental nurse will continue in the future. Under this assumption, there is an indicated immediate requirement for dental nurse manpower in the province of Manitoba.

The additional manpower requirement in Saskatchewan and Manitoba indicates the need for additional training output from the dental nurse program at the Wascana Institute of Applied Arts & Sciences. These requirements exclude the provinces of British Columbia and Alberta, where it has been indicated that the current dental care system (excluding dental nurses) has sufficient capacity to service the dental care needs of the child and adolescent population in the future.

RECOMMENDATIONS

15. That the Wascana Institute of Applied Arts and Sciences be recognized as the training program for the provinces of Saskatchewan and Manitoba for introductory dental nurse training.

16. That the student enrolment for the province of Saskatchewan be increased by 8 places (to 33 per year) in 1983, and by an additional 10 places per year in 1988 (to 43 per year).

17. That the province of Manitoba defer on decisions on the future training strategy for dental nursing until the review of the dental care system has been completed.

18. That subsequent to the decision on the future role of the dental nurse in the provision of dental care, the province of Manitoba review the potential to contract training places in the dental nurse training program at Wascana Institute of Applied Arts and Sciences.

D. PUBLIC HEALTH INSPECTOR

Occupational Role

The public health inspector interprets, advises upon and enforces regulations under the Public Health Act. The public health inspector interacts with a number of specialist occupational groups, each of whom deal with a specific aspect of environmental health.

Current Situation

There is one formal training program for public health inspection in western Canada, a two year certificate program at the British Columbia Institute of Technology. There are no formal bilateral training agreements between the province of British Columbia and other provinces of western Canada. The provinces of Alberta and Saskatchewan do, however, provide bursaries to students who attend this institution. Ryerson Polytechnical Institute in Toronto, Ontario, also offers a two year certificate program, and has recently introduced a four year degree program.

Findings

There is an immediate and ongoing requirement for additional public health inspectors in western Canada, throughout the forecast period. Recently, employment opportunities for public health inspectors have been somewhat limited by government funding constraints, and several graduates from the B.C.I.T. program have been unsuccessful in finding employment in their field. The increasing complexity of the environmental health field has led the public health inspection profession to identify the need for increased training to better equip themselves in coping with the broader aspects of environmental health.

Additionally, enhanced education is seen as a means by which broader career opportunities may be made available to public health inspectors. Members of the profession now consider a baccalaureate-level degree appropriate for entry into the profession. Experience in other jurisdictions, however, indicates that a two year certificate is appropriate for entry level positions, and baccalaureate and graduate degrees are appropriate for supervisory and managerial positions in the public health field. The training implications of the projected manpower requirements have been based on a potential two-tier career structure for public health inspectors, with the graduate of a two year certificate program providing basic field inspections and performing other technical aspects of the function. Progression to the second level of the two-tier career system would be dependent on the individual undergoing further upgrading training to the baccalaurate degree level. Training recommendations have been prepared to reflect this proposed two-tier career structure. It should be noted that there should be two alternatives for completion of the degree program. These are either a 4 year degree program or a two year upgrading of the certificate level program to degree status.

RECOMMENDATIONS

19. That the British Columbia Institute of Technology be designated the western Canada school responsible for certificate level public health inspection education.

20. That the intake of students into the two year certificate program at B.C.I.T. not be increased.

21. That Alberta contract for 11 training places annually, Saskatchewan 9 training places annually, Manitoba 7 places

annually and British Columbia secure 10 places per year in the two year certificate program.

22. That each province share in the ongoing operational and administrative overhead costs of the two year certificate program based on the proportion of training places allocated to each province (British Columbia 27.1%, Alberta 29.7%, Saskatchewan 24.3%, and Manitoba 18.9%).

23. That formal bilateral training agreements for the certificate program be negotiated between British Columbia and the other western provinces for an initial period of five years duration with subsequent renewal options for additional five year periods.

24. That one four year degree program in public health be developed for western Canada with an annual intake of approximately 20 students, and that this program should provide an option for either a four year degree, or alternatively a two year program to upgrade certificate level to degree level.

25. That the degree program be located in an institution with health science degree granting status located in either British Columbia or Alberta.

26. That formal bilateral training agreements for the degree program be negotiated between the western provinces for an initial period of five years, with subsequent renewal options for additional five year periods.

27. That Alberta contract for 6 training places annually, Saskatchewan 4 places annually, Manitoba 3 places annually, and British Columbia secure 6 places per year in the degree program.

28. That program costs in the degree program be based on the proportion of training places allocated to each province (British Columbia 36.6%, Alberta 35.1%, Saskatchewan 16.4%, and Manitoba 11.9%).

29. That the training delivery mechanism for the degree program make use of audio-visual and satelite capabilities to provide access by practitioners in field locations in the four western provinces.

III SUMMARY OF RECOMMENDATIONS

DENTAL LABORATORY TECHNICIAN

1. That an effective method be developed by the employers and professional associations to control the numbers admitted into apprenticeships for dental laboratory technicians in British Columbia.

2. That there be no increase in the number of student enrolments in the two year certificate program at the Northern Alberta Institute of Technology.

3. That the provinces of Saskatchewan and Manitoba, where feasible, jointly develop skill upgrading modules.

4. That these skill upgrading modules be presented at Wascana Institute of Applied Arts & Sciences and at Kelsey Institute of Applied Arts & Sciences in Saskatchewan, and at Red River Community College in Manitoba.

5. That the program development costs be shared on an equal basis by the provinces of Saskatchewan and Manitoba, conditional on the ability to jointly develop modules.

6. That the ongoing operational and administrative costs and initial capital costs specific to a province be borne by that province (i.e. Saskatchewan or Manitoba).

7. That the respective Governments of Saskatchewan and Manitoba provide finanical aid to those practitioners undertaking skill upgrading programs.

DENTAL MECHANIC

8. That an effective method be developed by the employers and professional associations to control the numbers admitted into apprenticeships for dental mechanics in British Columbia.

9. That the current enrolment level for the province of Alberta at N.A.I.T. not be increased.

10. That the province of Saskatchewan reduce the number of contracted training places at N.A.I.T. by 1 place (from 3 to 2) at the conclusion of the existing training agreement.

11. That Manitoba enter into a interim training contract with the Government of Alberta for two training places annually in the dental mechanic program at N.A.I.T. and that this agreement terminate simultaneously with the existing training contract between Alberta and Saskatchewan.

12. That the terms of the interim training contract between the provinces of Alberta and Manitoba be similar to those in the existing training contract between Alberta and Saskatchewan.

13. That at the time of re-negotiation of the training agreement between Saskatchewan and Alberta, a new basis for cost sharing based on the proportion of training places be introduced.

14. That under the new bilateral training agreement between Alberta and the provinces of Saskatchewan and Manitoba, program costs be shared on the following basis: Alberta 66%, Saskatchewan 17%, and Manitoba 17%.

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17. That the province of Manitoba defer on decisions on the future training strategy for dental nursing until the review of the dental care system has been completed.

18. That subsequent to the decision on the future role of the dental nurse in the provision of dental care, the province of Manitoba review the potential to contract training places in the dental nurse training program at Wascana Institute of Applied Arts and Sciences.

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21. That Alberta contract for 11 training places annually, Saskatchewan 9 training places annually, Manitoba 7 places annually and British Columbia secure 10 places per year in the two year certificate program.

22. That each province share in the ongoing operational and administrative overhead costs of the two year certificate program based on the proportion of training places allocated to each province (British Columbia 27.1%, Alberta 29.7%, Saskatchewan 24.3%, and Manitoba 18.9%).

23. That formal bilateral training agreements for the certificate program be negotiated between British Columbia and the other western provinces for an initial period of five years duration with subsequent renewal options for additional five year periods.

24. That one four year degree program in public health be developed for western Canada with an annual intake of approximately 20 students, and that this program should provide an option for either a four year degree, or alternatively a two year program to upgrade certificate level to degree level.

25. That the degree program be located in an institution with health science degree granting status located in either British Columbia or Alberta.

26. That formal bilateral training agreements for the degree program be negotiated between the western provinces for an initial period

of five years, with subsequent renewal options for additional five year periods.

27. That Alberta contract for 6 training places annually, Saskatchewan 4 places annually, Manitoba 3 places annually, and British Columbia secure 6 places per year in the degree program.

28. That program costs in the degree program be based on the proportion of training places allocated to each province (British Columbia 36.6%, Alberta 35.1%, Saskatchewan 16.4%, and Manitoba 11.9%).

29. That the training delivery mechanism for the degree program make use of audio-visual and satelite capabilities to provide access by practitioners in field locations in the four western provinces.

Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

EXECUTIVE SUMMARY
CATEGORY # 3 OCCUPATIONS

EXECUTIVE SUMMARY - CATEGORY III OCCUPATIONS

EXECUTIVE SUMMARY

CATEGORY #3 OCCUPATIONS

- Audiologist
- Speech Pathologist
- Dental Assistant
- Dental Hygienist
- Dentist
- Dietician
- Health Records Administrator
- Health Records Technician
- Medical Laboratory Technologist
- Occupational Therapist
- Pharmacist
- Physiotherapist
- X-Ray Technician
- Respiratory Technologist

Start here

This study has been prepared by Peat, Marwick and Partners, under the direction of the Western Canada Health Manpower Training Study Steering Committee.

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CATEGORY #3 OCCUPATIONS

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EXECUTIVE SUMMARY

I. INTRODUCTION

The provision of effective health services to the community is dependent on three resources: an adequate supply of well trained staff; adequate facilities; and the availability of sufficient funds to ensure an effective health service. The recent expanded range and complexity of health treatment programs and increased requirement for skilled, adequately trained health practitioners have resulted in an increased emphasis on manpower planning and skills training to ensure an adequate supply of trained practitioners.

The primary purpose of this study is to assess the existing and future needs for health care training programs and facilities in western Canada and to make recommendations on the rationalization of the location and funding of health manpower training programs and facilities in western Canada.

This study consists of a review of 29 health occupations. The occupations have been grouped into 5 categories in order of priority based on the current availability of training programs in western Canada. This report reviews the third category of fourteen occupations:

- Audiologist
- Speech Pathologist
- Dental Assistant
- Dental Hygienist
- Dentist
- Dietician

TABLE I

COMPOSITION OF HEALTH OCCUPATIONS WORKFORCE - WESTERN CANADA

OCCUPATION	% OF TOTAL HEALTH OCCUPATIONS WORKFORCE	COMPOSITION OF OCCUPATION WORKFORCE	
		% MALE	% FEMALE
REGISTERED NURSING	42.5	1.0	99.0
NURSING ASSISTANTS	15.5	0.5	99.5
PHYSICIANS	9.9	87.0	13.0
MEDICAL LAB. TECHS.	5.5	9.0	91.0
PHARMACY	4.7	67.1	32.9
PSYCHIATRIC NURSING	3.6	31.0	69.0
DENTAL ASSISTANTS	3.3	0.2	99.8
DENTISTS	3.0	94.6	5.4
X-RAY TECHNICIANS	2.2	19.0	81.0
PHYSIOTHERAPY	2.0	12.7	87.3
DENTAL HYGENISTS	1.0	2.3	97.7
HEALTH RECORDS	0.9	2.0	98.0
OPHTHALMIC DISPENSING	0.9	33.6	66.4
DIETICIANS	0.7	0.5	99.5
CHIROPRACTIC	0.6	96.8	3.2
OCCUPATIONAL THERAPY	0.6	2.7	97.3
AUDIOLOGY & SPEECH PATHOLOGY	0.6	13.9	86.1
PUBLIC HEALTH INSPECTION	0.4	91.7	8.3
DENTAL MECHANICS	0.4	93.3	6.7
DENTAL LAB. TECHS.	0.4	86.1	13.9
RESPIRATORY TECHNOLOGY	0.4	50.2	49.8
DENTAL NURSING	0.2	1.8	98.2
CHIROPODY/PODIATRY	0.05	80.0	20.0
ORTHOTICS/PROSTHETICS	0.05	80.0	20.0
TOTAL ALL HEALTH OCCUPATIONS	100.0	17.6	82.4

TABLE II

FULL-TIME/PART-TIME SPLIT
FEMALE HEALTH OCCUPATIONS - WESTERN CANADA

OCCUPATION	% FULL-TIME	% PART-TIME
REGISTERED NURSING	62.3	37.7
NURSING ASSISTANTS	63.6	36.4
DIETICIANS	71.7	28.3
PHYSIOTHERAPY	70.6	29.4
OCCUPATIONAL THERAPY	76.8	23.2
HEALTH RECORDS	82.0	18.0
MEDICAL LABORATORY TECHNOLOGISTS	83.0	17.0
X-RAY TECHNICIANS	83.4	16.6

NOTE: The split of full-time/part-time practitioners is based on a sample taken from the 1981 Vacancy Surveys in the Provinces of Alberta and Saskatchewan.

- Health Records Administrator
- Health Records Technician
- Medical Laboratory Technologist
- Occupational Therapist
- Pharmacist
- Physiotherapist
- X-Ray Technician
- Respiratory Technologist

GENERAL BACKGROUND

There are several common themes within the health care professions which are reviewed to form a general background for the specific discussion of the occupations in Category III. These general themes are discussed below.

Female Dominated Occupations

Approximately 80% of the health care workers in western Canada are female. Table 1, opposite, shows the composition of this workforce. The female dominated occupations have several characteristics which are discussed below.

Part-Time Working

Table II, opposite, shows the split for part-time/full-time practitioners in the female dominated health care occupations. In recent years there has been a significant trend towards part-time work in the female dominated health care occupations. It is difficult, however, to quantify this trend because of a lack of reliable historical data on the pattern of hours worked. The future trend for part-time working is difficult to forecast and should be carefully monitored to assess potential long term implications on manpower supply. There appear to be two conflicting economic factors which influence the trend towards part-time working. The potential high interest rates and long term inflation could result in part-time workers increasing the number of hours worked. This increase in hours may be further encouraged by increased emphasis on the provision of day-care facilities, work sharing and variable shift arrangements. The net effect of these interventions is to assist part-time employees to remain in the work force and to increase the number of hours worked. This increase may be partially offset, however, by a tendency for employees to develop target income expectations and to reduce the number of hours worked as salary levels increase. For the purposes of this study, these two trends have been considered to compensate one another and no change has been projected in part-time participation rates.

All requirements for registered nursing and nursing assistants have been expressed in terms of full time equivalent positions. Full-time equivalent is defined as the number of practitioners required to make up one full-time position. The split between full-time and part-time practitioners for other occupations was known in only two provinces, and there is limited information on the pattern of hours worked. The absence of this key information limited the validity of interprovincial comparisons, and of assumptions on full-time equivalency. Consequently, no attempt has been made to project future requirements on the basis of full-time equivalency.

Labour Turnover

The female dominated health care occupations have a pattern of labour turnover which is significantly different from the female dominated occupations in other sectors of the economy. Typically, the period of time spent in active employment is limited and it is estimated that a large proportion of personnel leave active employment each year. In the absence of any statistical information on labour turnover, estimates were developed for each occupation based on information obtained from professional associations, employer groups and government representatives. Because of the lack of validated data on labour turnover, a number of sensitivity analyses were undertaken to assess the impact of changes in turnover rate on the future supply of practitioners. Estimates ranging from 5-10% annual turnover were selected on which to base supply projections.

Inactive Practitioners

Estimates have been obtained from professional associations on the size of the inactive workforce for each of the occupations reviewed in this study. It is generally believed that there is a large "pool" of inactive practitioners in the health care professions. These inactive practitioners represent a potential source of manpower for the western region. At present, however, little is known about the relative size, composition and location of the inactive workforce. There is no clear understanding of the various factors which contribute to decisions to leave the active workforce, or the changes in employment patterns that will be required to attract inactive practitioners back into the workforce.

At present, the governments of the four western provinces are investing in refresher training programs for registered nurses. There are other occupations where rapid technological change may limit the ability of inactive practitioners to enter the active workforce.

Recommendation:

> That the four western provinces provide technical assistance in developing additional mechanisms to facilitate refresher training to allow inactive practitioners to return to the active workforce.

Limitation of Training as a Manpower Strategy

Although the study recommendations indicate a general increase in training outputs for several of the occupations reviewed, it is apparent that alternative and supplementary manpower strategies must also be adopted to ensure an adequate supply of practitioners in the future.

It is unlikely that increased training outputs alone will meet the projected manpower requirements for the health care occupations in western Canada. The health care sector will be competing with other sectors of the economy for high school graduates to enter post-secondary training programs. In 1980, approximately 19% of the population of western Canada were in the age group 14-24, and represented a potential pool for training for the labour force. By 1990, it is projected that this age group (14-24) will represent only 14.25% of the population.

Historically, the health care workforce has been dominated by female workers. It is now generally accepted that a number of alternative career options are available for female workers in professions which traditionally have not attracted females. In addition, the health care occupations are considered to be of limited attractiveness to many high school graduates. This image in part reflects the nature of the work, including shift work, and relative compensation levels in relation to other segments of the economy.

It is therefore unreasonable to expect that the post-secondary education system will be able to produce the required number of graduate health care workers in the future. In addition, the cost of training these students would prove prohibitive. Consequently, alternative supplementary manpower strategies must be developed to ensure an adequate supply of manpower for the health care system in the future.

Supplementary Manpower Strategies

Alternative supplementary manpower acquisition strategies include the development and implementation of recruitment and retention strategies to counteract the short period of time that the average female health care worker spends in the workforce. To date the majority of these efforts have addressed employment, social and economic factors through such measures as increased salaries, improved benefit packages, provision of child care and flexible hours of work and schedules. The effects of these types of recruitment/retention strategies have not been adequately studied to determine their effectiveness in extending the period of time spent in the workforce. In addition, it is necessary to address educational and organizational factors which effect the retention of health care workers and contribute to the period of time spent in the workforce.

Recommendation:

> That provincial health manpower planners in western Canada be directed to conduct and co-ordinate pilot projects to assess which types of short and longer term recruitment and retention strategies will be most successful in extending the period of time in the active workforce.
>
> That research into alternative manpower strategies focus on the educational and organizational practice factors affecting recruitment and retention of health care occupational workforce.

Review of the Education of Health Care Manpower

The education process has a considerable impact on the supply of health care manpower. The high rate of occupational shift out of the health care professions suggests that there are conflicts between the educational experience and expectations of practitioners and actual experiences in the job setting.

Recommendation:

That research should be undertaken to examine the current educational programs for health care occupations. This research should include:

- an examination of the entrance requirements to training programs, the accessibility of these programs to all qualified candidates, and the prospective student selection process;
- an examination of the factors affecting the relationship between education and the practice of professional skills in both institutional and community settings, and the educational experienced which affect a practitioner's job expectations;
- an examination of the support or guidance resources within an educational setting and the extent to which these resources contribute to reducing the attrition out of health care training programs; and
- an examination of how the educational process affects the image of the health care professions generally.

Co-Ordination of Health Care Manpower Strategies

Historically the health labour pool has been mobile, and the patterns of migration and immigration/emigration will have a significant impact on the future supply of personnel in western Canada. It is likely that the western region may in future been in competition with other areas of Canada, and with the United States for a limited supply of health care practitioners.

The co-ordination of manpower strategies, including recruitment and retention incentives, at the western Canada regional level would prove beneficial.

Recommendation:

That the Western Region should coordinate health manpower strategies to recruit and retain health manpower.

Considerations should be given to coordinating the following:

- compensation and benefits packages for both full-time and part-time personnel, as well as any other financial incentives which may be considered to reduce shortages in particular geographic locations; and
- sharing information and results of pilot retention and recruitment strategies undertaken in each province and the development of long-term research projects to assess the impact of these strategies.

Limitations of Information Used for Projections

There is an abscence of key planning information for the health care occupations. To date no adequate measure has been developed to accurately estimate the size of the inactive labour force, and there is little information on the period of time health care workers spend in the active workforce. In addition, there is limited historical or current information on the pattern of hours worked by part-time employees. This abscence of data results in a level of subjectivity which limits the overall effectiveness of the planning process.

Recommendation:

That the provincial government manpower planners continue to develop an information base for the health care occupations. to provide consistent, timely and accurate data for manpower planning purposes. Priority attention should be focused on developing an information base to include:

- uniform definitions of active and inactive personnel;
- a methodology for accurately measuring the occupational shift factor including the movement of personnel from active to inactive status, and movement in and out of the health care professions;
- a methodology for monitoring and accurately assessing the pattern of migration, immigration and emigration of health care personnel;
- uniform definitions of part-time and casual workers and accurate measurements of the average number of hours worked by each of these groups; and
- development of other information bases which would assist in validating trends in employment of health care personnel and the range of requirements for manpower in the future. This information should include the type and level of manpower required to meet future employment demands, and trends in new employment settings for health care personnel.

II. OCCUPATIONS IN CATEGORY #3

A. AUDIOLOGIST

Occupational Role

An audiologist provides diagnostic evaluation and rehabilitative services and conducts research related to hearing. These diagnostic tests are used to evaluate response patterns to differentiate between organic and non-organic hearing loss. The audiologist plans, directs and participates in couselling, speech reading and other rehabilitation programs.

Current Situation

There is one program which provides training in western Canada for audiologists. This graduate level program is offered through the University of British Columbia, and combines training for audiologists and speech pathologists. The combined enrolment for the program in 1981 was 15 students, but the University of British Columbia has indicated that student enrolment will be doubled to a combined intake of 30 by the year 1982. Of these enrolments it is estimated that 8 students will graduate in audiology in the forecast period.

Findings

There is a potential surplus of manpower during the projection period at the western Canada regional level. British Columbia and Manitoba have a minimal surplus, and there is a requirement for additional practitioners in Alberta and Saskatchewan. Currently, the audiology training program at the University of British Columbia is combined with the speech pathology training program. As a result, quotas are not formally established for the number of students choosing to specialize in audiology. There is a need to establish greater control over the number of audiologists entering the workforce, and the University of British Columbia should establish some formal mechanism to establish this control. It is appropriate to designate the audiology program at the University of British Columbia as the regional training program for audiology in western Canada. The provinces of Alberta and Saskatchewan should enter into bilateral training agreements with the Government of British Columbia. Historically, the rate of return of students trained outside of Manitoba has been greatest for those individuals trained in programs in the United States of America. As a result, training alternatives for audiologists in Manitoba include the option to study at the University of British Columbia or at preferred alternative locations.

RECOMMENDATIONS

- **British Columbia**
  - That the University of British Columbia establish a mechanism to control the number of students specializing as an audiologist from the Speech and Audiology Program.
  - That, as of 1983, a quota of between 6 to 8 students enter the University of British Columbia, Speech and Audiology Program in the speciality of audiology.
- **Alberta**
  - That the Province of Alberta contract 2 places annually in the University of British Columbia, Speech and Audiology Program.

- That the Province of Alberta share the ongoing operational and administrative overhead costs based on the proportion of students entering the University of British Columbia, Speech and Audiology Program.

- That the Province of Alberta provide 2 bursaries a year toward studies in the University of British Columbia, Speech and Audiology program.

- That the training contract be established for a minimum period of five years with options for further five year periods.

- Saskatchewan

- That the Government of Saskatchewan contract 1 place annually in the University of British Columbia, Speech and Audiology Program.

- That the Province of Saskatchewan share ongoing operational and administrative overhead costs based on the proportion of students entering the University of British Columbia, Speech and Audiology Program.

- That the Province of Saskatchewan continue to make available 1 bursary a year for studies in audiology, and that the bursary be awarded to students enroled in the University of British Columbia, Speech and Audiology program.

- That the training contract be established for a minimum period of five years with options for further five year periods.

- Manitoba

    - That the Province of Manitoba continue to have 1 bursary available to students for studies in audiology.

    - That the Province of Manitoba review the advantages of contracting for training places in the University of British Columbia, Speech and Audiology program in preference to programs in other locations, and that, if it is considered that this provides the best alternative, enter into a formal training agreement with the Province of British Columbia to secure places in the program.

B. SPEECH PATHOLOGIST

Occupational Role

A speech pathologist diagnoses, and treats speech, language and voice disorders and performs related research. The speech pathologist plans and conducts remedial exercises and programs to correct stuttering, abnormal articulation and other disorders, and provides speech training for patients with communication problems caused by Cerebal Palsy, surgical removal of the larynx, hearing difficiencies and other impairments.

Current Situation

There are two training programs in western Canada which provides training for speech pathologists. These programs are offered at the University of British Columbia, and the University of Alberta. The two programs have a combined graduate output of 38 speech pathologists a year. The speech pathology program at the University of British Columbia is at the master degree level, and combines training for speech pathologists and audiologists. It is planned to double the enrolment level to a combined intake of 30 in the year 1982. Of these enrolments, 10-14 students are expected to graduate as speech pathologists. The speech pathology program at the University of Alberta is at the undergraduate level.

Both of the provinces of Saskatchewan and Manitoba grant bursaries to students persuing studies in speech pathology. In Saskatchewan, 3 bursaries a year are granted, and in Manitoba, 7 bursaries a year are allocated.

Findings

The requirements for speech pathologists have been developed working towards a ratio of 1 speech pathologist per 7,000 people. The ratio is determined as a reasonable one to attain by the year 2000. Discussions among the profession has suggested a need for further research regarding the development of a ratio having a higher proportion of speech pathologists to population to meet an increasing need for speech pathology services. Should this ratio be developed and recognizes the requirement for speech pathologists will be greater than that currently projected. There is a limited requirement for approximately 10 additional practitioners per year at the regional level until the year 2000. There is an immediate requirement for additional speech pathologists in Alberta, with a potential surplus developing by the year 2000. In British Columbia, Saskatchewan and Manitoba there is a requirement for additional speech pathologists until the year 2000. It is appropriate for the existing training programs in speech pathology at the University of British Columbia, and the University of Alberta to continue, and the University of Alberta should provide additional training places in speech pathology for students from Saskatchewan and Manitoba. As an alternative, the development of an additional training program for the provinces of Saskatchewan and Manitoba has been reviewed. Given the limited manpower requirement for an average of 18 additional speech pathologists per year throughout the forecast period in Saskatchewan and Manitoba, the preferred option is to train speech pathologists at the University of Alberta. It should be recognized, however, that the training program at the University of Alberta is at the undergraduate level, and the provincial governments of Saskatchewan and Manitoba should review possible concerns on the general acceptability of speech pathologists trained at this undergraduate level.

RECOMMENDATIONS

- British Columbia

  - That the University of British Columbia, Speech and Audiology program continue with an enrolment of 30 students a year.

  - That the University of British Columbia initiate measures to control the proportion of students graduating as audiologists or speech pathologists.

  - That the proportion of students graduating in speech pathology be increased to a minimum of 14 a year.

- Alberta, Saskatchewan and Manitoba

  - That the University of Alberta be designated as the University responsible for training speech pathologists for Alberta, Saskatchewan and Manitoba.

  - That the enrolment be increased by 13 places a year to accommodate an enrolment of 40 students.

  - That Saskatchewan contract for 7 places annually, and Manitoba 11 places annually, and Alberta secure 22 places per year in the University of Alberta program.

  - That each province share in the ongoing operation and administrative overhead costs of the program based on the proportion of training places allocated to each province.

- That formal bilateral training agreements for the program be negotiated between Alberta, Saskatchewan and Manitoba for an initial period of five years, with subsequent renewal options for additional five year periods.

- That the Province of Saskatchewan increase the number of bursaries available for studies in speech pathology from 2 to 7 bursaries a year.

- That these bursaries be made available to students studying at the undergraduate level at the University of Alberta.

- That the Province of Manitoba increase the number of bursaries available for studies in speech pathology from 7 to 11 bursaries a year.

- That these bursaries be made available to students studying at the undergraduate level at the University of Alberta.

Saskatchewan and Manitoba

- That a continual review by conducted on the number of students obtaining bursaries and returning to Saskatchewan and Manitoba. If these numbers are continually lower than the actual number of bursaries available, the rationale of training out of province through bursaries should be questioned and the alternative of setting up a joint speech pathology program between the provinces of Saskatchewan and Manitoba should be considered.

- That if the provinces of Saskatchewan and Manitoba prefer the development of a new program in speech pathology, that the program have an annual enrolment of 20 students, with 8 places for Saskatchewan and 12 places for Manitoba.

C. DENTAL ASSISTANT

Occupational Role

A dental assistant assists the dentist in the care and treatment of patients. The range and duties of responsibilities will vary, but may include the preparation of the patient for dental care and the arranging of instruments, materials and medication for the dentist. The assistant may also prepare materials using a mechanical amalgamator and all instruments including steralization using ovens, autoclaves and aspetic solutions. The generic title of dental assistant can be subdivided into those trained by dentists in their offices (on-the-job trained), and those trained in the formal setting (either classroom or correspondence). Where permitted by training, and by provincial legislation the dental assistant may polish teeth, apply fluoride to teeth and perform other inter-oral procedures. With the increased sophistication of dental care, and the expanding technology it is anticipated that on-the-job trained assistants may be replaced by assistants who have received formal inter-oral training.

Current Situation

There are currently 15 college based training programs for dental assistants in western Canada. The combined number of graduates from these programs is 470 graduates per year. In addition to the college based programs, there is a National Correspondence Course provided by the Continuing Education Division of the Northern Alberta Institute of Technology. This course is designed to upgrade the level of training for dental assistants who have been trained on-the-job. It is estimated that approximately 120 students in western Canada graduate from this program each year.

Findings

The manpower situation for dental assistant in western Canada is projected to be in approximate balance throughout the forecast period. British Columbia and Manitoba have an indicated surplus of practitioners while Alberta and Saskatchewan have a minimal requirement for additional practitioners.

RECOMMENDATIONS

- **British Columbia**
  - o That current enrolment levels into dental assistant training programs be reduced by 10% or 20 places per year.
- **Alberta**
  - o That current enrolment levels into dental assistant training programs be maintained for 5 years and that a reassessment of future manpower requirements be carried out at that time.
- **Saskatchewan**
  - o That current enrolment levels into dental assistant training programs be increased by 10 places per year.
- **Manitoba**
  - o That current enrolment levels into dental assistant training programs be decreased by 8 places per year.

D. DENTAL HYGIENIST

Occupational Role

A dental hygienist provides preventive dental services, and instructs patients in the care of the teeth and mouth. The hygienist scales and polishes teeth to remove hard and soft deposits and polishes fillings to remove tarnish and corrosion. In addition, the dental hygienist applies topical agents and sealants to teeth to reduce decay. In addition, the dental hygienist may instruct individuals and groups in home dental care and provide dietary counselling related to dental health.

Current Situation

There is a currently a training program in dental hygiene in each of the four western provinces. The combined training outputs from these programs are approximately 85 graduates per year.

Findings

There is a potential for minimal surplus of dental hygienists in western Canada. The projected surplus of dental hygienists in British Columbia, Saskatchewan and Manitoba is offset by a requirement for additional practitioners in Alberta. The future requirement for dental hygienists is, to a degree, partially constrained by the projected oversupply of dentists. In many instances the skills of the dentist and the dental hygienist overlap. Thus it is reasonable to assume that as the number of dentists increases to a surplus situation, the potential number of dental auxiliaries will either remain static or potentially decline. The future requirement of dental hygienists have been projected on an assumption that the current pattern of utilization of dental auxiliary manpower continues in the future. In addition, requirements have been projected on an assumption that the demand for auxiliaries increases if the supply of dentists is controlled. With the exception of the province of Alberta, dental hygienists must work under the general direction of a supervisory dentist. Members of the dental hygienists profession are currently seeking amendment in legislation to allow dental auxiliaries to establish private, independent practices. The impact of this change on future manpower requirements for dental hygienists has not been evaluated. It is considered, however, that there is sufficient training capacity within the four programs in western Canada to ensure an adequate supply of dental hygienist in the future.

RECOMMENDATIONS

- **British Columbia**
    - That the enrolment levels into the dental hygiene program at the University of British Columbia be maintained at the current level for a period of five years.
    - That no additional training programs for dental hygiene be considered at this time.
- **Alberta**
    - That existing training enrolments in dental hygiene programs be increased by 25 per year.

- Saskatchewan

  - That enrolment levels into the dental hygiene program at the Wascana Institute be maintained at the current level.

  - That consideration be given to expanding current enrolment levels by 5 if it is considered that the current ratio of dental hygienists to population is unacceptable.

- Manitoba

  - That enrolment levels into the dental hygiene program at the University of Manitoba be maintained at the current level.

E. DENTIST

Occupational Role

A dentist is a person who diagnoses and treats diseases, injuries and malformations of teeth, gums and related oral structures and perscribes and administers preventive procedures.

Current Situation

There is currently one training program in dentistry in each of the four western provinces. These programs have a combined graduate output of 135 per year.

Findings

There is a projected surplus of dentists at the western Canada regional level, and at the national level. There is currently a significant surplus of dentists in British Columbia and this surplus is projected to increase throughout the forecast period. There is a potential surplus of dentists in Saskatchewan, a balanced situation in the forecast period in Manitoba, and a requirement for additional practitioners in the province of Alberta. The potential surplus of manpower is further compounded by the increase in productivity which is resulted from changes in organizational practice patterns, the impact of technological changes including the use of the high-speed drill, and the increased usage of dental auxiliary manpower. The net effect of the increase in productivity and the increase in the number of practitioners is a direct increase in the potential capacity of the dental care system in western Canada. At the same time, the increased emphasis on preventive dental care, and the use of fluoridation processess has generally resulted in improved dental health.

The future demands for dental services is difficult to anticipate. The increase in third party dental insurance coverage has resulted in a high proportion of the population having access to dental care. Research has indicated, however, that this may not necessarily result in an increased demand for dental care, as a demand for services and economic and physical accessability appear to be unrelated. The impact of third party insurance on future utilization of dental services is not clear at this time.

Traditionally dentists have enjoyed a high degree of mobility, and there has been a high rate of migration into the province of British Columbia. The province of Ontario has a significant training output and graduates approximately 175 new dentists per annum. The potential to reduce training inputs into the Ontario training programs is currently being discussed. Any reduction in training outputs would have a significant impact on the long-term rate of migration into western Canada. Given the projected oversupply of dentists at both the western Canada regional level, and at the national level, there is a need to limit the number of new dentists entering the labour market. The potential to limit migration of dental manpower into over-serviced areas could be exercised through control of right to bill third party insurers for certain procedures. This could influence patterns of manpower mobility and provide incentive for practitioners to establish in under serviced areas.

There is an on-going requirement to train approximately 90 dentists per year in western Canada. Given the uncertainty of the future patterns of migration, it is appropriate to maintain current training enrolments for the provinces of Alberta, Saskatchewan and Manitoba. Given the significant projected surplus in the province of British Columbia it is appropriate to reduce dental program enrolments by approximately 40%.

RECOMMENDATIONS

- **British Columbia**

  o That annual enrolments into the dental program at the University of British Columbia be reduced by 15 places per year to an annual intake quota of 25.

- **Alberta**

  o That annual enrolments into the dental program at the University of Alberta be maintained at the current level for a period of five years.

  o That the trend in migration into the province be carefully monitored, and that the effect of migration on future supply is assessed in relation to the manpower requirements determined using a ratio of 1:2,000.

- **Saskatchewan**

  o That enrolment levels into the dental program at the University of Saskatchewan be maintained at the current level for a period of five years.

- **Manitoba**

  o That enrolment levels into the dental program at the University of Manitoba be maintained at the current level for a period of five years.

F. DIETICIANS

Occupational Role

A dietician plans and supervises food service programs in governmental, institutional and commercial establishments to provide nutritionally adequate quality food.

Current Situation

There are four programs in western Canada which provide the academic training required to prepare individuals to pursue careers as dieticians. This training is provided through the Food and Nutrition program of the Home Economics Faculty. These programs currently have an annual output of 83. After graduation from the Food and Nutrition program the students are usually eligible to apply for an internship program in dietetics. This internship is required before an individual is qualified to work as a professional dietician. Dietetic internships are only available through health institutions which have been accredited by the Canadian Dietetic Association. There are currently 73 internship positions available in western Canada.

Findings

There is currently a projected requirement for approximately 330 additional dieticians in western Canada in the forecast period. British Columbia, Alberta and Saskatchewan are projected to require additional practitioners and Manitoba has a minimal surplus. Although there are currently sufficient graduates from the four food and nutrition programs, and a sufficient number of dietetic positions in western Canada, there are insufficient numbers of western Canadian graduates obtaining dietetic internships. Manpower strategies for insuring an adequate supply of dieticians in western Canada include the monitoring and adjustment of the number of graduates receiving dietetic internships to ensure an adequate supply of qualified dieticians in the western Canadian labour market.

RECOMMENDATIONS

- British Columbia
  - That there be no changes in the number of student enrolments in the Food and Nutrition Program at the University of British Columbia.
  - That the province of British Columbia review the number of students from British Columbia receiving dietetic internships, as a factor to increase the supply of dieticians.
  - That the number of students receiving dietetic internships be increased by 6 per year.
- Alberta
  - That the University of Alberta increase the enrolment of the Food and Nutrition Program, in the Faculty of Home Economics, by 5 places.

- That the province of Alberta review the number of students from Alberta receiving dietetic internships as a factor to increase the supply of dieticians.

- That the number of students receiving dietetic internships be increased by 9 per year.

- **Saskatchewan**

  - That there be no changes in the number of student enrolments in the Food and Nutrition Program at the University of Saskatchewan.

  - That the province of Saskatchewan review the number of students from Saskatchewan receiving dietetic internships, as a factor to increase the supply of dieticians.

  - That the number of students receiving internships be increased by 4 per year.

- **Manitoba**

  - That there be no changes in the number of student enrolments in the Food and Nutrition Program at the University of Manitoba.

  - That the province of Manitoba monitor the number of students from Manitoba receiving dietetic internships to ensure an adequate supply of qualified dieticians.

  - That the number of students receiving internships be increased by 1 per year.

- All Provinces

  - That all provinces monitor the inter-relationship between dieticians and nutritionists to determine the future supply and net requirements of each group, and to ensure that sufficient graduates from food and nutrition programs enter the internship to qualify as a professional dietician.

G. HEALTH RECORDS

Occupational Role

There were two levels of health records personnel reviewed in this study. A health records administrator compiles and maintains medical records and statistics of hospital and clinical patients. In addition, the health record administrator compiles statistical reports, and releases medical information to authorized personnel.

A health records technician assists the health record administrator by carrying out technical activities within the medical records department, including the typing of medical information, the preparation of statistical reports, and the review of medical records.

Typically, in a large health records department the health records administrator will be the supervisor of technicians and other support staff.

Current Situation

There are currently two training programs for health records administrators graduating approximately 27 per annum, and there is one combined technician/administrator program with an annual output of 8 health records administrators. There are two training programs for technicians with an output of approximately 35 graduates per annum. In addition to these programs, there is a correspondence course for health record technicians available through the Canadian College of Health Records Administrators with an annual estimated output of 42 technicians.

The University of Victoria has developed a four year degree in health information science. It is anticipated that this program will graduate 24 students in 1986.

Findings

There are currently many more qualified health records personnel than budgeted positions available. This indicates that there will be a surplus of practitioners in the forecast period. Given this indicated surplus of health records administrators there is the potential to reduce the number of training programs from the existing 3 programs to 2 programs. These programs should be located in British Columbia and Alberta where the manpower requirements are greatest. If Manitoba or Saskatchewan experience a requirement for health record administrators in the future, they should contract training places in either the British Columbia or Alberta program. The minimal future requirement for health record technicians will be met by the output of the correspondence course. Therefore there is no necessity to continue training health record technicians at the institutional level in western Canada.

The University of Victoria program for health information sciences is unique in Canada. Given a trend towards the computerization of health records information, it is anticipated that the larger hospitals, government and industry will develop an initial demand for graduates of this program. It is anticipated that the one program will have sufficient capacity to meet the total projected manpower requirements for the western Canada region.

RECOMMENDATIONS

- **British Columbia**
  - That British Columbia's proposed training program for technicians not be established.
  - That British Columbia maintain the current enrolment in the training program for administrators.
  - That British Columbia cancel the newly developed program which upgrades technicians to administrators.
- **Alberta**
  - That Alberta maintain the current enrolment in the training program for administrators.
- **Saskatchewan**
  - That Saskatchewan phase out the training program for administrators over the next five years, and during that time assess the impact of a reduced program and make adjustments accordingly.
- **Manitoba**
  - That Manitoba not develop a training program for administrators.

General Recommendations

- That Saskatchewan and Manitoba contract places in the administrator training program in British Columbia or Alberta as the need arises.
- That the University of Victoria be designated the western Canada school responsible for training health information science personnel.
- That the current training programs for technicians in Alberta, Saskatchewan and Manitoba be phased out over the next five years.
- That Alberta contract 3 places annually, Saskatchewan and Manitoba 1 place annually in the University of Victoria program.
- That formal bilateral training agreements for the university program be negotiated between British Columbia and the other western provinces for an initial period of five years duration, with subsequent renewal options for additional five year periods.
- That all ongoing operational and administrative overhead costs, and all program development, start up and capital costs of the proposed University of Victoria Health Information Science program should be shared by the Governments of British Columbia, Alberta, Saskatchewan and Manitoba on the basis of the proportion of places allocated to that province in the training program.

H. MEDICAL LABORATORY TECHNOLOGIST

Occupational Role

A medical laboratory technologists performs medical laboratory tests, procedures, experiments and analysis for the diagnoses, treatment and prevention of disease.

Current Situation

There are currently eight formal training programs in western Canada for medical laboratory technologists. These programs have a combined annual output of approximately 320 graduates.

Findings

There is a projected requirement for approximately 100 additional practitioners per annum throughout the forecast period, and each of the four western provinces has a requirement for additional practitioners. Data from the Canadian Society of Laboratory Technologists indicates that there is a pool of inactive medical laboratory technologists in each of the provinces in western Canada. Given the rapid rate of technological change, it is anticipated that medical laboratory technologists returning to the active workforce should receive some form of refresher training to enhance skills to meet the projected manpower requirements. Refresher training programs are not mandatory for registration with the provincial or national associations, and some on-the-job training is currently being conducted. Additionally, some provincial associations provide refresher courses. However, it is unrealistic to rely on employers and associations to provide the refresher training necessary for inactive technologists to return to the workforce in numbers which will meet each provinces projected manpower requirements. It is therefore recommended that each province provide the technical assistance in developing refresher training mechanisms to facilitate inactive practitioners returning to the workforce.

In addition, it is possible to increase the output of the training programs by increasing in-training retention.

RECOMMENDATIONS

- **British Columbia**
  - That British Columbia continue to offer the refresher course given in 1981 to enrol 25 students.
  - That British Columbia expand the enrolment in the current programs by 20 students to total 145 students.
- **Alberta**
  - That Alberta develop a refresher course to enrol 25 students.
  - That Alberta maintain the enrolment levels in the current training programs.
  - That Alberta improve the student output to input ratio in the current programs so that more graduates can be produced without expanding the program enrolment.

- Saskatchewan

  - That Saskatchewan develop a refresher course to enrol 15 students.

  - That Saskatchewan maintain the enrolment levels in the current training programs.

- Manitoba

  - That Manitoba develop a refresher course to enrol 20 students.

  - That Manitoba maintain the enrolment levels in the current training program.

- Western Canada

  - That each province should increase the number of clincial spaces available according to the increase in enrolment in medical laboratory technology programs.

I. OCCUPATIONAL THERAPIST

Occupational Role

An occupational therapists plans and carries out treatment programs based on activities such as work, education and recreation to rehabilitate physically and mentally disabled persons. The occupational therapist administers tests, and observes patients to assess their emotional, mental and physical capacity and then plan and direct program in manual and creative arts, industrial and vocational skills, recreational activities, remedial games, cultural and educational interests and play activities for children.

Current Situation

There are currently three university training programs for occupational therapists in western Canada. The program at the University of British Columbia traditionally combined physical and occupational therapy. In 1982, however, it is planned to split the combined program into two separate programs, one in occupational therapy and one in physical therapy. The projections for supply of occupational therapists in British Columbia have been based on assumptions that there will be two separate programs in 1982 and that the new occupational therapy program will graduate 18 per annum. The program at the University of Alberta graduates 26 per annum, and the program at the University of Manitoba graduates 17 per annum. In addition, the province of Saskatchewan provides 8 bursaries a year for students to pursue out-of-province studies in occupational therapy.

Findings

The role of the occupational therapist has become more defined in recent years, and there is an increased demand for occupational therapy services within the health care system. In other jurisdictions, there are different levels of occupational therapy manpower including occupational therapist assistant and occupational therapy aide. In the western provinces these levels do not formally exist. Should the health care system within Canada formally recognize, train and take steps to utilize the different levels of occupational therapy services, the requirement for qualified occupational therapists may be reduced.

There is a requirement for approximately 50 additional occupational therapists per annum in western Canada throughout the forecast period. In British Columbia there is a projected requirement for approximately 25 additional occupational therapists per year. This would indicate need to increase the annual enrolment into the occupational therapy program to 40. Alberta has a requirement for approximately 16 additional practitioners per year. The concept of an accelerated training program for occupational therapists has been developed by the University of Alberta to meet the immediate requirement for occupational therapists. If these programs were provided, there would be a minimal increase required in the regular undergraduate programs in occupational therapy to meet the projected manpower requirements by the year 2000. If the accelerated programs are not introduced an alternative would be to increase the enrolments in current programs by approximately 20 places per year. The manpower situation for Saskatchewan establishes a need for approximately 10 additional graduates a year to meet the projected requirements by the year 2000. This requirement supports the development of a training program in Saskatchewan with an enrolment of 20 students per annum based on current situation in which 8 bursaries are granted per year and the projection requirement for 10 additional occupational therapists. However, if out-of-province training is preferred the program in occupational therapy at the University of Manitoba should be formally established as the main program providing training for Saskatchewan and Manitoba. In Manitoba the requirement for occupational therapists could be met through an increase of 5 program enrolments per year.

RECOMMENDATIONS

- British Columbia
  - That the Occupational Therapy program at the University of British Columbia increase enrolments to accomodate 40 places a year.
  - That in 1990 the Province of British Columbia reassess the manpower situation and determine the priority of reaching a service target ratio of 1:5,000 by the year 2000.
  - That if determined a priority, the Province of British Columbia, increase the number of graduates from the Universtiy of British Columbia, Occupational Therapy program. This increase could be through either the regular training program or with the development of an accelerated training program.
- Alberta
  - The current program for occupational therapists in Alberta be increased by 5 places to accommodate an enrolment of 35 students.

- That an accelerated program be implemented for three years, starting in 1984, with an enrolment of 40 students.
- That an accelerated program be implemented for three years, starting in 1993, with an enrolment of 40 students.

- Saskatchewan

- That with a priority for in-province training the Government of Saskatchewan establish a training program for occupational therapists and the program have an enrolment of 20 students.
- That with a priority for out of province training, the Government of Saskatchewan secure 20 places in the University of Manitoba, Occupational Therapy program.
- That the Province of Saskatchewan cancel the existing training agreement with Alberta.
- That the Government of Saskatchewan share in the ongoing operational and administrative overhead costs of the University of Manitoba, Occupational Therapy program based on the proportion of training places allocated.
- That the formal bilateral training agreements be negotiated between Manitoba and Saskatchewan for an initial period of five years with subsequent renewal options for additional five year periods.
- That the Government of Saskatchewan increase the number of bursaries available for studies in occupational therapy from 8 to 20.

- Manitoba

  - That the University of Manitoba increase the enrolment in the Occupational Therapy program by 5 places a year to meet its manpower requirement through training by the year 2000.

  - That if out of province training is preferred for the province of Saskatchewan, the University of Manitoba increase the Occupational Therapy program by 25 places to accomodate an enrolment of 55 students.

  - That the Government of Manitoba study and implement incentives to retain new graduates inside the provincial workforce.

J. PHARMACIST

Occupational Role

A retail pharmacists compounds and dispenses prescribed pharmaceuticals and related preparations through retail outlets. A hospital pharmacist compounds and dispenses drugs and medicines in a hospital.

Current Situation

There are currently 4 training programs for pharmacists in western Canada. There is one program in each of the four western provinces, and a total annual output of 243.

Findings

At the western Canada regional level there is a balance situation for pharmacists until 1990, and a potential surplus of practitioners for the balance of the forecast period till the year 2000. The initial balanced manpower situation is primarily due to the requirement for additional practitioners in British Columbia being offset by the projected surplus of practitioners in the province of Alberta. However, after 1990 the projected surplus in Alberta continues to increase and this results in a surplus at the regional level. The future manpower situation for pharmacists at the provincial level will be influenced by the pattern of migration. It as been assumed that the rate of migration into British Columbia will increase, primarily from Alberta where there is the potential surplus of practitioners. It is apparent that any immediate major change in training enrolments at the provincial level are not justified, given the potential for balance manpower situation in the near future at the regional level. Given the uncertainty of projection on migration rates it is recommended that the governments of Alberta and British Columbia monitor the manpower situation for pharmacists to determine if provincial inbalances are self-correcting. It is suggested that alternative strategies be considered to attract pharmacist to British Columbia from the province of Alberta.

RECOMMENDATIONS

- British Columbia
  - That the current program enrolment in British Columbia be expanded by 50 students if the monitored in-migration does not satisfy the requirement for practitioners.
- Alberta
  - That the program in Alberta be reduced in a phased manner according to the numbers of migrants and immigrants entering the province, with the aim of halving the program size over the next 20 years.
- Saskatchewan
  - That the current enrolment in the Saskatchewan program be maintained.
- Manitoba
  - That the current enrolment in the Manitoba program be maintained.

K. PHYSIOTHERAPIST

Occupational Role

A physiotherapist plans and carries out programs of physical treatment, in consultation with physician and other health care workers to rehabilitate injured or disabled patients. The physiotherapist administers muscle, nerve, joint and functional ability tests to identify physical problems of patients. The physiotherapist directs and aids patients individually, or in groups, in exercises designed to assist muscle restoration and joint mobility.

Current Situation

There are currently four training programs available for training physiotherapists in western Canada. These programs have a combined training output of 100 per annum. The program at the University of British Columbia has traditionally been a combined physical and occupational therapy program. It is planned to split this program into two programs, one in occupational therapy and one in physical therapy in 1982. The projected output subsequent to the separation of the programs will be 90 per annum from 1986.

Findings

There is a projected requirement for approximately 60 additional physiotherapists per annum in western Canada throughout the forecast period. This manpower requirement is based on optimum ratio, with the assumption that there will be an appropriate level of government budgetary allocation for physiotherapy services, and a priority to attain an optimum level of physiotherapy services. The role of the physiotherapist has become established within the health care system, and in recent years the profession has sought to broaden the scope of the practice, thereby increasing the responsibility level and role of the physiotherapist and increasing the demand for physiotherapy services.

Historically, the Canadian Physiotherapy Association has had a reciprocity agreement with physiotherapists entering Canada from Commonwealth countries. As of September 1982, the Canadian Association will change its policy to require Commonwealth immigrants to complete the same entrance procedures as non-Commonwealth immigrants. This policy change is expected to have significant effect on the number of physiotherapists entering Canada from Commonwealth countries, and for purposes of the study it has been estimated that this change will reduce the number of physiotherapists entering the country by 50%.

Because of the uncertainty on the future flow of immigrants into British Columbia the initial training recommendations are to increase enrolment in physiotherapy training programs by 20 to 30 places until 1985. At this time the impact of any change of immigration patterns should be reassessed and adjustments made to training strategies to meet future manpower requirements. Two training alternatives have been developed for the province of Alberta based on the projected requirement for significant numbers of additional physiotherapists in the future. One alternative is to immediately implement the training strategy to reach a certain optimal ratio of physiotherapists by the year 2000, and a second alternative is based on a different government priority regarding the level of physiotherapy services. The manpower requirements for Alberta have assumed a continuation of the current modes of practice, as the impact of recent changes in legislation (including the right of the physiotherapist to establish private practice and bill the provincial health care insurance program directly), on future manpower requirements is unknown. The province of

Saskatchewan will require an increase in enrolments from 20 to 35, in their physiotherapy training program to meet manpower requirements for physiotherapists by the year 2000. In Manitoba, an increase of 6 places a year to accomodate an enrolment of 28 students in the training program recommended to meet future manpower requirements.

RECOMMENDATIONS

- **British Columbia**

  - That the University of British Columbia increase the number of enrolments in the physiotherapy program from 20 to 30 places a year and this level be maintained to 1985.

  - That for 1983 and 1984 the supply of physiotherapists be closely monitored to determine the impact of the 1982 change in policy issued by the Canadian Physiotherapy Association regarding the immigration of physiotherapists from Commonwealth countries.

  - That in 1985 the flow of immigration be determined and adjustments be made in the training program to meet the net manpower requirement by the year 2000.

- **Alberta**

  - That, in order to reach a ratio of 1:3,000, the province of Alberta develop an additional program to train physiotherapists, that the program have an enrolment of 35 students.

- That if the ratio of 1:3000 is not supported by government priorities, the province of Alberta initiate training to meet the manpower requirement determined under a ratio of 1:3,500.

- That, in order to reach a ratio of 1:3,500, the province of Alberta increase the University of Alberta program in physiotherapy by 20 places to an annual enrolment of 60 students.

- That the requirement level for physiotherapists be reviewed in 1986 to determine the priority of reaching a service target ratio of 1:3,000 by the year 2000.

- That if determined a priority, the province of Alberta establish a new program in physiotherapy, to accomodate an enrolment of 25 students.

- Saskatchewan

  - That the University of Saskatchewan increase the number of enrolments in the physiotherapy program by 15 to accommodate an annual enrolment of 35 students.

- Manitoba

  - That the University of Manitoba increase the number of enrolments in the physiotherapy program by 6 places a year to accommodate an annual enrolment of 28 students.

- That the province of Manitoba study and develop retention incentives to ensure the entry of new graduates into the Manitoba labour market.

L. X-RAY TECHNICIAN

Occupational Role

An x-ray technician performs either diagnostic or therapeutic activities. An x-ray technician (diagnostic) operates radiography equipment to produce pictures of body structures for diagnostic purposes. An x-ray technician (therapy) administers radiation treatment to patients has prescribed by a radiation oncologist.

Current Situation

There is currently one training program in each of the four western provinces in Canada, and these programs have a current projected output of 130 graduates per annum.

Findings

There is a potential requirement for an additional 100 practitioners per annum throughout the forecast period. Data obtained from the provincial and national associations indicate that there are significant number of inactive x-ray technicians in each of the four western provinces. It is realistic to anticipate that this pool of active practitioners represents a significant source of additional manpower. Given the rapid rate of technological change, it is anticipated that x-ray technicians returning to the active workforce should receive some form of refresher training to enhance skills. Although refresher training programs are not mandatory for registration with the provincial and national associations it is suggested that each province provide technical assistance in developing refresher training mechanisms to facilitate the return of inactive practitioners to the active workforce. The projected manpower requirement for Saskatchewan and British Columbia could be met through the introduction of refresher training programs. It will be necessary, however, to expand current training outputs in the province of Alberta and Manitoba.

RECOMMENDATIONS

- **British Columbia**
  - That British Columbia develop a refresher mechanism to enrol 20 students.
- **Alberta**
  - That Alberta develop a refresher mechanism to enrol 25 students.
  - That Alberta establish a second program to enrol 40 students.
- **Saskatchewan**
  - That Saskatchewan develop a refresher mechanism to enrol 20 students.
- **Manitoba**
  - That Manitoba develop a refresher mechanism to enrol 15 students.
  - That Manitoba expand the enrolment levels in its current training program by 20 students.

- **All Provinces**

  - o That each province increase the clinical spaces available according to the increase in x-ray technicians produced in that province.

M. RESPIRATORY TECHNOLOGIST

Occupational Role

A respiratory technologist administers respiratory therapy to patients in hospital or in home settings. The respiratory technologist sets up ventilators, incubators, manual resuscitators, and other life support equipment. The technologist operates controls of equipment to adjust airway pressure, humidity, blood/gas levels, respiratory rate and other functions and monitors the patients progress and equipment function.

Current Situation

There are four training programs in western Canada. The training program in British Columbia has an annual projected output of 10 graduates, the two programs in Alberta have an annual output of 54 graduates, and the program in Manitoba has an annual projected output of 16 graduates.

Findings

There are differing patterns of utilization for respiratory technologists in each of the four western provinces. Alberta and Manitoba have developed a pattern of utilization for respiratory technologists which appears to reflect the standard role outlined above. In constrast there is a very different pattern of utilization in British Columbia and Saskatchewan. It is not clear, however, whether this pattern of useage has resulted from either a limited supply of manpower or an underdeveloped role for the occupation in the health care delivery system in these provinces. Potential positions that could be occupied by specialists respiratory technologists are currently held by other categories of manpower including nurses and occupational therapists.

The priority for training and recruitment of respiratory technologists varies between institutions and funding agencies. The manpower requirements for Alberta and Manitoba have been projected on the assumption that the existing pattern of utilization continues in the future, and for British Columbia and Saskatchewan on the assumption that there is an increase in the number of budgeted positions for respiratory technologists. At the western Canada regional level there is a need to train approximately 5 additional practitioners per year throughout the forecast period. It is considered appropriate to continue training in the existing programs in British Columbia, Alberta and Manitoba. Given the size of the manpower requirement in Saskatchewan it is appropriate for the government of Saskatchewan to enter into a training contract with the government of Alberta to secure training places in the existing Alberta programs.

RECOMMENDATIONS

- **British Columbia**
  - That, on the basis of a service target ratio of 1:13,000, the training program at Cariboo College, be expanded to an annual intake of 25.
  - That, alternatively, if the current population ratio is considered appropriate for British Columbia, the existing enrolment levels at Cariboo College should be maintained.

- Alberta

  - That current enrolments for the province of Alberta in existing training programs in the province should be reduced by 25% (from 63 to 47 per year). NOTE: this figure of 47 excludes the 3 training places contracted for Saskatchewan.

- **Saskatchewan**

  - That the government of Saskatchewan enter into a formal training agreement with the government of Alberta for three places in Alberta training programs.

  - That the government of Saskatchewan share the ongoing operational and administrative overhead costs based on the proportion of training places allocated and under this bilateral training agreement Saskatchewan should pay 6% of program costs.

  - That the formal training agreement between the governments of Saskatchewan and Alberta should be for a minimum period of five years, with an option for extension for further five year periods.

- **Manitoba**

  - That the government of Manitoba should maintain current enrolment levels.

III SUMMARY OF RECOMMENDATIONS

REFRESHER TRAINING MECHANISM

Recommendation:

That the four western provinces provide technical assistance in developing additional mechanisms to facilitate refresher training to allow inactive practitioners to return to the active workforce.

SUPPLEMENTARY MANPOWER STRATEGIES

Recommendation:

That provincial health manpower planners in western Canada be directed to conduct and co-ordinate pilot projects to assess which types of short and longer term recruitment and retention strategies will be most successful in extending the period of time in the active workforce.

That research into alternative manpower strategies focus on the educational and organizational practice factors affecting recruitment and retention of health care occupational workforce.

REVIEW OF THE EDUCATION OF HEALTH CARE MANPOWER

Recommendation:

That research should be undertaken to examine the current educational programs for health care occupations. This research should include:

- an examination of the entrance requirements to training programs, the accessibility of these programs to all qualified candidates, and the prospective student selection process;

- an examination of the factors affecting the relationship between education and the practice of professional skills in both institutional and community settings, and the educational experienced which affect a practitioner's job expectations;

- an examination of the support or guidance resources within an educational setting and the extent to which these resources contribute to reducing the attrition out of health care training programs; and

- an examination of how the educational process affects the image of the health care professions generally.

CO-ORDINATION OF HEALTH CARE MANPOWER STRATEGIES

Recommendation:

That the Western Region should coordinate health manpower strategies to recruit and retain health manpower.

Considerations should be given to coordinating the following:

- compensation and benefits packages for both full-time and part-time personnel, as well as any other financial incentives which may be considered to reduce shortages in particular geographic locations; and

- sharing information and results of pilot retention and recruitment strategies undertaken in each province and the development of long-term research projects to assess the impact of these strategies.

LIMITATION OF INFORMATION USED FOR PROJECTIONS

Recommendation:

That the provincial government manpower planners continue to develop an information base for the health care occupations to provide consistent, timely and accurate data for manpower planning purposes. Priority attention should be focused on developing an information base to include:

- uniform definitions of active and inactive personnel;

- a methodology for accurately measuring the occupational shift factor including the movement of personnel from active to inactive status, and movement in and out of the health care professions;

- a methodology for monitoring and accurately assessing the pattern of migration, immigration and emigration of health care personnel;

- uniform definitions of part-time and casual workers and accurate measurements of the average number of hours worked by each of these groups; and

- development of other information bases which would assist in validating trends in employment of health care personnel and the range of requirements for manpower in the future. This information should include the type and level of manpower required to meet future employment demands, and trends in new employment settings for health care personnel.

AUDIOLOGIST

British Columbia

- That the University of British Columbia establish a mechanism to control the number of students specializing as an audiologist from the Speech and Audiology Program.

- That, as of 1983, a quota of between 6 to 8 students enter the University of British Columbia, Speech and Audiology Program in the speciality of audiology.

Alberta

- That the Province of Alberta contract 2 places annually in the University of British Columbia, Speech and Audiology Program.

- That the Province of Alberta share the ongoing operational and administrative overhead costs based on the proportion of students entering the University of British Columbia, Speech and Audiology Program.

- That the Province of Alberta provide 2 bursaries a year toward studies in the University of British Columbia, Speech and Audiology program.

- That the training contract be established for a minimum period of five years with options for further five year periods.

- Saskatchewan

  - That the Government of Saskatchewan contract 1 place annually in the University of British Columbia, Speech and Audiology Program.

  - That the Province of Saskatchewan share ongoing operational and administrative overhead costs based on the proportion of students entering the University of British Columbia, Speech and Audiology Program.

  - That the Province of Saskatchewan continue to make available 1 bursary a year for studies in audiology, and that the bursary be awarded to students enroled in the University of British Columbia, Speech and Audiology program.

  - That the training contract be established for a minimum period of five years with options for further five year periods.

- **Manitoba**

  - That the Province of Manitoba continue to have 1 bursary available to students for studies in audiology.

  - That the Province of Manitoba review the advantages of contracting for training places in the University of British Columbia, Speech and Audiology program in preference to programs in other locations, and that, if it is considered that this provides the best alternative, enter into a formal training agreement with the Province of British Columbia to secure places in the program.

SPEECH PATHOLOGISTS

- **British Columbia**

  - That the University of British Columbia, Speech and Audiology program continue with an enrolment of 30 students a year.

  - That the University of British Columbia initiate measures to control the proportion of students graduating as audiologists or speech pathologists.

  - That the proportion of students graduating in speech pathology be increased to a minimum of 14 a year.

- **Alberta, Saskatchewan and Manitoba**

  - That the University of Alberta be designated as the University responsible for training speech pathologists for Alberta, Saskatchewan and Manitoba.

- That the enrolment be increased by 13 places a year to accommodate an enrolment of 40 students.
- That Saskatchewan contract for 7 places annually, and Manitoba 11 places annually, and Alberta secure 22 places per year in the University of Alberta program.
- That each province share in the ongoing operation and administrative overhead costs of the program based on the proportion of training places allocated to each province.
- That formal bilateral training agreements for the program be negotiated between Alberta, Saskatchewan and Manitoba for an initial period of five years, with subsequent renewal options for additional five year periods.
- That the Province of Saskatchewan increase the number of bursaries available for studies in speech pathology from 2 to 7 bursaries a year.
- That these bursaries be made available to students studying at the undergraduate level at the University of Alberta.
- That the Province of Manitoba increase the number of bursaries available for studies in speech pathology from 7 to 11 bursaries a year.
- That these bursaries be made available to students studying at the undergraduate level at the University of Alberta.

- Saskatchewan and Manitoba

  - That a continual review by conducted on the number of students obtaining bursaries and returning to Saskatchewan and Manitoba. If these numbers are continually lower than the actual number of bursaries available, the rationale of training out of province through bursaries should be questioned and the alternative of setting up a joint speech pathology program between the provinces of Saskatchewan and Manitoba should be considered.

  - That if the province of Saskatchewan and Manitoba prefer the development of a new program in speech pathology, that the program have an annual enrolment of 20 students, with 8 places for Saskatchewan and 12 places for Manitoba.

DENTAL ASSISTANT

- British Columbia

  - That current enrolment levels into dental assistant training programs be reduced by 7.5% or 15 places per year.

- Alberta

  - That current enrolment levels into dental assistant training programs be maintained for 5 years and that a reassessment of future manpower requirements be carried out at that time.

- Saskatchewan

  - That current enrolment levels into dental assistant training programs be increased by 10 places per year.

- **Manitoba**

  - That current enrolment levels into dental assistant training programs be increased by 8 places per year.

DENTAL HYGIENISTS

- **British Columbia**

  - That the enrolment levels into the dental hygiene program at the University of British Columbia be maintained at the current level for a period of five years.

  - That no additional training programs for dental hygiene be considered at this time.

- **Alberta**

  - That existing training enrolments in dental hygiene programs be increased by 25 per year.

- **Saskatchewan**

  - That enrolment levels into the dental hygiene program at the Wascana Institute be maintained at the current level.

  - That consideration be given to expanding current enrolment levels by 5 if it is considered that the current ratio of dental hygienists to population is unacceptable.

- **Manitoba**

  - That enrolment levels into the dental hygiene program at the University of Manitoba be maintained at the current level.

DENTISTS

- **British Columbia**

  o That annual enrolments into the dental program at the University of British Columbia be reduced by 15 places per year to an annual intake quota of 25.

- **Alberta**

  o That annual enrolments into the dental program at the University of Alberta be maintained at the current level for a period of five years.

  o That the trend in migration into the province be carefully monitored, and that the effect of migration on future supply is assessed in relation to the manpower requirements determined using a ratio of 1:2,000.

- **Saskatchewan**

  o That enrolment levels into the dental program at the University of Saskatchewan be maintained at the current level for a period of five years.

- **Manitoba**

  o That enrolment levels into the dental program at the University of Manitoba be maintained at the current level for a period of five years.

DIETICIAN

- British Columbia

  - That there be no changes in the number of student enrolments in the Food and Nutrition Program at the University of British Columbia.

  - That the province of British Columbia review the number of students from British Columbia receiving dietetic internships, as a factor to increase the supply of dieticians.

  - That the number of students receiving dietetic internships be increased by 6 per year.

- Alberta

  - That the University of Alberta increase the enrolment of the Food and Nutrition Program, in the Faculty of Home Economics, by 5 places.

  - That the province of Alberta review the number of students from Alberta receiving dietetic internships as a factor to increase the supply of dieticians.

- That the number of students receiving dietetic internships be increased by 9 per year.

- **Saskatchewan**

  - That there be no changes in the number of student enrolments in the Food and Nutrition Program at the University of Saskatchewan.

  - That the province of Saskatchewan review the number of students from Saskatchewan receiving dietetic internships, as a factor to increase the supply of dieticians.

  - That the number of students receiving internships be increased by 4 per year.

- **Manitoba**

  - That there be no changes in the number of student enrolments in the Food and Nutrition Program at the University of Manitoba.

  - That the province of Manitoba monitor the number of students from Manitoba receiving dietetic internships to ensure an adequate supply of qualified dieticians.

  - That the number of students receiving internships be increased by 1 per year.

- **All Provinces**

  - That all provinces monitor the inter-relationship between dieticians and nutritionists to determine the future supply and net requirements of each group, and to ensure that sufficient graduates from food and nutrition programs enter the internship to qualify as a professional dietician.

HEALTH RECORDS

- **British Columbia**
  - That British Columbia's proposed training program for technicians not be established.
  - That British Columbia maintain the current enrolment in the training program for administrators.
  - That British Columbia cancel the newly developed program which upgrades technicians to administrators.
- **Alberta**
  - That Alberta maintain the current enrolment in the training program for administrators.
- **Saskatchewan**
  - That Saskatchewan phase out the training program for administrators.
- **Manitoba**
  - That Manitoba not develop a training program for administrators.

General Recommendations

- That Saskatchewan and Manitoba contract places in the administrator training program in British Columbia or Alberta as the need arises.

- That the University of Victoria be designated the western Canada school responsible for training health information science personnel.

- That the current training programs for technicians in Alberta, Saskatchewan and Manitoba be phased out over the next five years.

- That Alberta contract 3 places annually, Saskatchewan and Manitoba 1 place annually in the University of Victoria program.

- That formal bilateral training agreements for the university program be negotiated between British Columbia and the other western provinces for an initial period of five years duration, with subsequent renewal options for additional five year periods.

- That all ongoing operational and administrative overhead costs, and all program development, start up and capital costs of the proposed University of Victoria Health Information Science program should be shared by the Governments of Alberta, Saskatchewan and Manitoba on the basis of the proportion of places allocated to that province in the training program.

MEDICAL LABORATORY TECHNOLOGIST

- British Columbia

  - That British Columbia continue to offer the refresher course given in 1981 to enrol 25 students.

  - That British Columbia expand the enrolment in the current programs by 20 students to total 145 students.

- Alberta

  - That Alberta develop a refresher course to enrol 25 students.

  - That Alberta maintain the enrolment levels in the current training programs.

  - That Alberta improve the student output to input ratio in the current programs so that more graduates can be produced without expanding the program enrolment.

- Saskatchewan

  - That Saskatchewan develop a refresher course to enrol 15 students.

  - That Saskatchewan maintain the enrolment levels in the current training programs.

- Manitoba

  - That Manitoba develop a refresher course to enrol 20 students.

  - That Manitoba maintain the enrolment levels in the current training program.

- Western Canada

  - That each province should increase the number of clincial spaces available according to the increase in enrolment in medical laboratory technology programs.

OCCUPATIONAL THERAPIST

- British Columbia

  - That the Occupational Therapy program at the University of British Columbia increase enrolments to accomodate 40 places a year.

  - That in 1990 the Province of British Columbia reassess the manpower situation and determine the priority of reaching a service target ratio of 1:5,000 by the year 2000.

    That if determined a priority, the Province of British Columbia, increase the number of graduates from the University of British Columbia, Occupational Therapy program. This increase could be through either the regular training program or with the development of an accelerated training program.

- Alberta

  - The current program for occupational therapists in Alberta be increased by 5 places to accommodate an enrolment of 35 students.

  - That an accelerated program be implemented for three years, starting in 1984, with an enrolment of 40 students.

  - That an accelerated program be implemented for three years, starting in 1993, with an enrolment of 40 students.

- Saskatchewan

  - That with a priority for in-province training the Government of Saskatchewan establish a training program for occupational therapists and the program have an enrolment of 20 students.

  - That with a priority for out of province training, the Government of Saskatchewan secure 20 places in the University of Manitoba, Occupational Therapy program.

  - That the Province of Saskatchewan cancel the existing training agreement with Alberta.

  - That the Government of Saskatchewan share in the ongoing operational and administrative overhead costs of the University of Manitoba, Occupational Therapy program based on the proportion of training places allocated.

  - That the formal bilateral training agreements be negotiated between Manitoba and Saskatchewan for an initial period of five years with subsequent renewal options for additional five year periods.

- That the Government of Saskatchewan increase the number of bursaries available for studies in occupational therapy from 8 to 20.

Manitoba

- That the University of Manitoba increase the enrolment in the Occupational Therapy program by 5 places a year to meet its manpower requirement through training by the year 2000.

- That if out of province training is preferred for the province of Saskatchewan, the University of Manitoba increase the Occupational Therapy program by 25 places to accomodate an enrolment of 55 students.

- That the Government of Manitoba study and implement incentives to retain new graduates inside the provincial workforce.

PHARMACIST

British Columbia

- That the current program enrolment in British Columbia be expanded by 50 students if the monitored in-migration does not satisfy the requirement for practitioners.

- **Alberta**

  - o That the program in Alberta be reduced in a phased manner according to the numbers of migrants and immigrants entering the province, with the aim of halving the program size over the next 20 years.

- **Saskatchewan**

  - o That the current enrolment in the Saskatchewan program be maintained.

- **Manitoba**

  - o That the current enrolment in the Manitoba program be maintained.

PHYSIOTHERAPIST

- **British Columbia**

  - o That the University of British Columbia increase the number of enrolments in the physiotherapy program from 20 to 30 places a year and this level be maintained to 1985.

  - o That for 1983 and 1984 the supply of physiotherapists be closely monitored to determine the impact of the 1982 change in policy issued by the Canadian Physiotherapy Association regarding the immigration of physiotherapists from Commonwealth countries.

- That in 1985 the flow of immigration be determined and adjustments be made in the training program to meet the net manpower requirement by the year 2000.

- Alberta

- That, in order to reach a ratio of 1:3,000, the province of Alberta develop an additional program to train physiotherapists, that the program have an enrolment of 35 students.

- That if the ratio of 1:3000 is not supported by government priorities, the province of Alberta initiate training to meet the manpower requirement determined under a ratio of 1:3,500.

- That, in order to reach a ratio of 1:3,500, the province of Alberta increase the University of Alberta program in physiotherapy by 20 places to an annual enrolment of 60 students.

- That the requirement level for physiotherapists be reviewed in 1986 to determine the priority of reaching a service target ratio of 1:3,000 by the year 2000.

- That if determined a priority, the province of Alberta establish a new program in physiotherapy, to accomodate an enrolment of 25 students.

- **Saskatchewan**

  - That the University of Saskatchewan increase the number of enrolments in the physiotherapy program by 15 to accommodate an annual enrolment of 35 students.

- **Manitoba**

  - That the University of Manitoba increase the number of enrolments in the physiotherapy program by 6 places a year to accommodate an annual enrolment of 28 students.

  - That the province of Manitoba study and develop retention incentives to ensure the entry of new graduates into the Manitoba labour market.

X-RAY TECHNICIAN

- **British Columbia**

  - That British Columbia develop a refresher course to enrol 20 students.

- **Alberta**

  - That Alberta develop a refresher course to enrol 25 students.

  - That Alberta establish a second program to enrol 40 students.

- Saskatchewan

  - That Saskatchewan develop a refresher course to enrol 20 students.

- Manitoba

  - That Manitoba develop a refresher course to enrol 15 students.

  - That Manitoba expand the enrolment levels in its current training program by 20 students.

- All Provinces

  - That each province increase the clinical spaces available according to the increase in x-ray technicians produced in that province.

Only one or two provinces supplying the western region with technicians for the following reasons:

- the predominantly female stock might be reluctant to move to another province

- there is no guarantee that the students will return to their home province because often, upon graduation, the technicians are hired by the clinics or hospitals where they undergo the clinical aspect of their training

RESPIRATORY TECHNOLOGIST

- British Columbia

    - That, on the basis of a service target ratio of 1:13,000, the training program at Cariboo College, be expanded to an annual intake of 25.

    - That, alternatively, if the current population ratio is considered appropriate for British Columbia, the existing enrolment levels at Cariboo College should be maintained.

- Alberta

    - That current enrolments for the province of Alberta in existing training programs in the province should be reduced by 25% (from 63 to 47 per year). NOTE: this figure of 47 excludes the 3 training places contracted for Saskatchewan.

- Saskatchewan

    - That the government of Saskatchewan enter into a formal training agreement with the government of Alberta for three places in Alberta training programs.

    - That the government of Saskatchewan share the ongoing operational and administrative overhead costs based on the proportion of training places allocated and under this bilateral training agreement Saskatchewan should pay 6% of program costs.

- That the formal training agreement between the governments of Saskatchewan and Alberta should be for a minimum period of five years, with an option for extension for further five year periods.

- Manitoba

- That the government of Manitoba should maintain current enrolment levels.

Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

EXECUTIVE SUMMARY
CATEGORY # 4 OCCUPATIONS

- Registered Nurses
- Psychiatric Nurses
- Nursing Assistants

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- Registered Nurses
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- Nursing Assistants

This study has been prepared by Peat, Marwick and Partners, under the direction of the Western Canada Health Manpower Training Study Steering Committee.

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EXECUTIVE SUMMARY

CATEGORY #4 OCCUPATIONS

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EXECUTIVE SUMMARY

I. INTRODUCTION

The provision of effective health services to the community is dependent on three resources: an adequate supply of well trained staff; adequate facilities; and the availability of sufficient funds to ensure an effective health service. The recent expanded range and complexity of health treatment programs and increased requirement for skilled, adequately trained health practitioners have resulted in an increased emphasis on manpower planning and skills training to ensure an adequate supply of trained practitioners.

The primary purpose of this study is to assess the existing and future needs for health care training programs and facilities in western Canada and to make recommendations on the rationalization of the location and funding of health manpower training programs and facilities in western Canada.

This report summarizes the study findings for the nursing occupations. These are:

- Registered Nurses
- Psychiatric Nurses
- Nursing Assistants

The nursing professions represent approximately 60% of all health occupational groups in western Canada, and are an integral component in the health care system. The provision of a high quality nursing service is dependent not only on an adequate supply of well trained specialist staff but also on the participation of these trained individuals in the active workforce.

Our detailed study of the nursing professions identified several common issues or themes which apply to all categories of nursing personnel. It is important that these factors be recognized and their impact on training and the specific training requirements identified in this report be fully understood. These issues are discussed below.

Limitations of Information Used for Projections

There is an abscence of key planning information for the nursing occupations group. To date no adequate measure has been developed to accurately estimate the size of the inactive labour force, and there is little information on the period of time nurses spend in the active workforce. In addition, there is limited historical or current information on the pattern of hours worked by part-time employees. This abscence of data results in a level of subjectivity which limits the overall effectiveness of the planning process.

Recommendation 1:

That the provincial government manpower planners develop an information base for the nursing occupations to provide consistent, timely and accurate data for manpower planning purposes. Priority attention should be focused on developing an information base to include:

- uniform definitions of active and inactive nursing personnel;
- a methodology for accurately measuring the occupational shift factor including the movement of nursing personnel from active to inactive status, and movement in and out of the nursing professions;

- a methodology for monitoring and accurately assessing the pattern of migration, immigration and emigration of nursing personnel;
- uniform definitions of part-time and casual workers and accurate measurements of the average number of hours worked by each of these groups; and
- development of other information bases which would assist in validating trends in employment of nursing personnel and the range of requirements for nursing manpower in the future. This information should include the type and level of nurses required to meet future employment demands, and trends in new employment settings for nursing personnel.

Part-Time Working

In recent years there has been a significant trend towards part-time work in the nursing occupations. It is difficult to quantify this trend because of a lack of reliable historical data on the pattern of hours worked. The trend towards increased part-time working is best illustrated by registered nursing. In 1976, 23% of the registered nurses in western Canada worked part-time hours. In 1980, 38% of registered nurses worked part-time. This indicates that the training efforts to increase manpower supply are being offset by the reduced number of direct care hours resulting from the increased number of part-time workers.

The future trend for part-time working is difficult to forecast and should be carefully monitored to assess potential long term implications on manpower supply. There appear to be two conflicting economic factors which influence the trend towards part-time working. The potential high interest rates and long term inflation could result in part-time workers increasing the number of hours worked. This increase in hours may be further encouraged by increased emphasis on the provision of day-care facilities, work sharing and variable shift arrangements. The net effect of these interventions is to assist part-time employees to remain in the work force and to increase the number of hours worked. This increase may be partially offset, however, by a tendency for employees to develop target income expectations and to reduce the number of hours worked as salary levels increase. For the purposes of this study, these two trends have been considered to compensate one another and no change has been projected in part-time participation rates.

All requirements for registered nursing and nursing assistants have been expressed in terms of full time equivalent positions. Full-time equivalent is defined as the number of practitioners required to make up one full-time position. The split between full-time and part-time practitioners for psychiatric nursing was known in only one province, and no attempt has been made to project future requirements on the basis of full-time equivalency.

Labour Turnover

The nursing professions have a pattern of labour turnover which is significantly different from female occupations in other sectors of the economy. Typically, the period of time spent in active employment in nursing is short and it is estimated that a large proportion of nursing personnel leave active employment each year. In the abscence of any statistical information on labour turnover, estimates were developed based on information obtained from professional associations, employer groups and government representatives. Because of the lack of validated data on labour turnover, a number of sensitivity analyses were undertaken to assess the impact of changes in turnover rate on the future supply of practitioners. A range of 8-10% annual turnover were selected on which to base supply projections. There is no information available to validate this key assumption.

Analysis of the limited historical information available indicated that there are periodic fluctuations in labour turnover. This is attributable to a variety of complex factors which have not been accurately measured because of inadequate data. In addition it is unclear whether these factors willbe consistent in the future with the historical trends.

The results of this study indicate that labour turnover is the most sensitive factor in the projection of the future supply of nursing manpower. It is also the most difficult factor to quantify, and, in the absence of clear information, the estimates used for supply projections during the study are the most realistic approach currently available.

The future supply of nursing manpower could be increased by lowering the rate of turnover through the development of recruitment and retention strategies specifically designed to encourage practitioners to remain inthe active workforce for a longer period of time.

Inactive Practitioners

It is generally believed that there is a large "pool" of inactive practitioners in the nursing professions. These inactive practitioners represent a potential source of manpower for the western region. At present, however, little is known about the relative size, composition and location of the inactive workforce. There is limited understanding of the various factors which contribute to decisions to leave the active workforce, or of the changes in employment patterns that will be required to attract inactive practitioners back into the workforce.

At present, the governments of the four western provinces are investing in refresher training programs for registered nurses. Initial indications from these training programs are that the majority of nurses re-enter the active workforce on a part-time basis.

Limitation of Training as a Manpower Strategy

Although the study recommendations indicate a general increase in training outputs for the nursing occupations, it is apparent that supplementary manpower strategies must also be adopted to ensure an adequate supply of nursing manpower in the future.

It is unlikely that increased training outputs alone will meet the projected manpower requirements for the nursing occupations in western Canada. The health care sector will be competing with other sectors of the economy for high school graduates to enter post-secondary training programs. In 1980, approximately 19% of the population of western Canada were in the age group 14-24, and represented a potential pool for training for the labour force. By 1990, it is projected that this age group (14-24) will represent only 14.25% of the population.

Historically, the nursing workforce has been dominated by female workers, and approximately 90% of the registered nurses and nursing assistants in western Canada are female. This contrasts with psychiatric nursing where 60% of the workforce is female. It is now generally accepted that a number of alternative career options are available for female workers in professions which traditionally have not attracted females. In addition, the nursing occupations are considered to be of limited attractiveness to many high school graduates. This image in part reflects the nature of the work, including shift work, and relative compensation levels in relation to other segments of the economy.

It is therefore unreasonable to expect that the post-secondary education system will be able to produce the required number of graduate nurses in the future. In addition, the cost of training these students would prove prohibitive. Consequently, alternative supplementary manpower strategies must be developed to ensure an adequate supply of manpower for the health care system in the future.

Supplementary Manpower Strategies

Supplementary manpower acquisition strategies include the development and implementation of recruitment and retention strategies to counteract the short period of time that the average female health care worker spends in the workforce. To date the majority of these efforts have addressed employment, social and economic factors through such measures as increased salaries, improved benefit packages, provision of child care and flexible hours of work and schedules. The effects of these types of recruitment/retention strategies have not been adequately studied to determine their effectiveness in extending the period of time spent in the workforce. In addition, it is necessary to address educational and organizational factors which effect the retention of health care workers and contribute to the period of time spent in the workforce.

Recommendation 2:

> That provincial manpower planners in western Canada should conduct research projects to assess which types of short and longer term recruitment and retention strategies would likely be the most successful in increasing the supply of nursing manpower. This research should include the identification of controllable and uncontrollable factors which impact on recruitment and retention.

That education and health manpower planners in all four provinces should be consulted, and input should be sought from the respective nursing associations and from nursing employers.

That research into alternative manpower strategies should focus on the educational and organizational practice factors affecting recruitment and retention of nursing manpower.

Review of the Education of Nursing Manpower

The education process has a considerable impact on the supply of nursing manpower. The high rate of occupational shift out of the nursing profession suggests that there are conflicts between the educational experience and expectations of nursing personnel and actual experiences in the job setting.

Recommendation 3:

That research should be undertaken to examine the current educational programs for the nursing occupations. This research should include:

- an examination of the entrance requirements to training programs, the accessibility of these programs to all qualified candidates, and the prospective student selection process;

- an examination of the factors affecting the relationship between education and the practice of nursing in both institutional and community settings, and the educational experienced which affect a nurse's job expectations;

- an examination of the support or guidance resources within an educational setting and the extent to which these resources contribute to reducing the attrition out of nursing programs; and

- an examination of how the educational process affects the image of the nursing profession generally.

Co-Ordination of Nursing Manpower Strategies

Historically the nursing labour pool has been mobile, and the patterns of migration and immigration/emigration will have a significant impact on the future supply of nursing personnel in western Canada. It is likely that the western region may in future been in competition with other areas of Canada, and with the United States for a limited supply of registered nurses.

The co-ordination of nursing manpower strategies, including recruitment and retention incentives, at the western Canada regional level would prove beneficial.

Recommendation 4:

That the Western Region, through a new interprovincial committee, should coordinate health manpower planning efforts to recruit and retain nursing manpower.

Considerations should be given to coordinating the following:

- development of specialized training programs to meet the Western Region's need for management-level nursing

- compensation and benefits packages for both full-time and part-time nursing personnel, as well as any other financial incentives which may be considered to reduce shortages in particular geographic locations; and

- sharing information and results of pilot retention and recruitment strategies undertaken in each province and the development of long-term research projects to assess the impact of these strategies.

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OCCUPATIONS IN CATEGORY #4

A. REGISTERED NURSE

Occupational Role

A registered nurse provides total nursing care for patients in hospitals, nursing homes, extended care facilities and other establishments. Registered nurses discuss and plan nursing care of assigned patients with physicians and other members of the health team, and direct the activities of the nursing care of the patients. The registered nurse administers prescribed medications and treatments, observes, records and reports symptons and changes in the patients condition.

Current Situation

There are formal training programs for registered nurses in each of the four western provinces of Canada. There are currently three types of training programs for registered nurses:

- Basic training or entry level training
- Refresher training
- Upgrading of related occupations to registered nurse

Basic training (or entry level training), is provided in three settings, hospital-based training programs, community college based training programs and university degree nursing programs. It is projected that approximately 2700 nurses graduate from basic training programs in the western Canada region each year.

There are two types of refresher training programs. These are hospital based programs and community college programs. It is estimated that approximately 800 nurses graduate from refresher training programs each year.

There are two levels of upgrading training. These are upgrading from a related occupation (normally from nursing assistant) to registered nurse, and from two year diploma registered nurse to degree level registered nurse. Approximately 40 registered nurses graduate from upgrading from related occupations, and approximately 300 diploma R.N's complete their nursing degree per annum.

It is estimated that currently 3500 registered nurses enter the labour market each year in western Canada.

Findings

There are a number of significant occupational issues which influence the present supply and requirements for full-time registered nurses in western Canada. The average working life of a nurse is relatively short, and studies have indicated that there is presently a shortage of nurses willing to participate in the active workforce, as opposed to a shortage of trained nurses. This implies that there is a large inactive pool of experienced and qualified registered nurses in western Canada. The actual size, age structure, geographic location and social composition of this inactive pool is unknown. The likelihood of this group of inactive practitioners returning in significant numbers to the active workforce is also unknown. It appears that successful re-entry into the active workforce is linked to the availability and accessibility of refresher training.

Future requirements for registered nurses will depend on a number of factors. Increases in the number of registered nurses working part-time, or reduction in the actual number of hours worked by part-time employees would reduce the number of direct full-time equivalent practitioners, and therefore increase the manpower requirement. In addition, changes in the manner in which nursing care is provided will also impact on the future requirements. For example, the introduction of primary nursing would have an impact on the number of registered nurses required to provide an effective level of care.

There is a projected shortage of active registered nurses in the western Canadian region and it is apparent that government and employers must focus on a number of alternative manpower strategies to ensure an adequate supply. It is unlikely that an increase in training outputs alone would be sufficient to ensure a balanced manpower situation. Alternative projections undertaken during the analytical phase of this study, have indicated that the most significant factor in the future supply of nursing manpower is the labour turnover rate. It is therefore recommended that supplementary manpower strategies focus on increasing the retention and recruitment of registered nurses. It should be recognized, however, that there is a minimum level for labour turnover and attrition. It is therefore considered appropriate to increase training outputs for the four western provinces, to supplement projected supply.

RECOMMENDATION

Recommendation 5:

The Province of British Columbia should make efforts to increase the number of entry-level training outputs through reducing the current attrition rates of these programs.

Recommendation 6:

The Province of Alberta should increase the number of entry-level training outputs by the maximum amount possible in 1982 and should attempt to increase the size and/or number of its training programs to allow for an increase in trained graduates by approximately 20%-30% above planned levels in the longer term.

Recommendation 7:

The Province of Saskatchewan should increase the number of entry level training outputs by the maximum possible in 1982 and should attempt to increase the size and/or number of training programs to allow for an increase in trained graduates by approximately 20%-25% above planned levels in the longer term.

Recommendation 8:

The Province of Manitoba should maintain the number of entry level training outputs and should, if possible, attempt to further reduce the attrition levels out of training programs.

Recommendation 9:

The provinces of British Columbia, Alberta, Saskatchewan and Manitoba should carefully monitor the success of recruitment and retention strategies and the supply and requirement for registered nurses in order to make any other changes required in training program size in 1985 or sooner.

B. NURSING ASSISTANT

Occupational Role

The term nursing assistant is a generic term used to describe this level of nursing manpower. In British Columbia and Manitoba individuals in this profession are licensed as Practical Nurses. In Alberta there are known as Registered Nursing Assistants, and in Saskatchewan they are called Certified Nursing Assistant. Nursing assistants provide nursing care for patients in hospitals and other similar establishments. Nursing assistants take and record blood pressures, temperature, pulse and respiration rates, and can apply dressings and administer injections, medications and other treatments under general supervision. A nursing assistant may bathe patients, make beds and assist with rehabilitation procedures.

Current Situation

There are formal training programs for nursing assistants in each of the four western provinces of Canada. There are 14 community college based programs and one hospital based program. These programs have a combined annual graduation of approximately 1000 nursing assistants.

Findings

The future role of the nursing assistant is as yet undetermined. The historical relationship with registered nurses is currently being re-evaluated. Recent trends have indicated that fewer nursing assistants are being employed. There is currently a relatively small wage differential between registered nursing and nursing assistants, and it has been suggested that this factor results in employers hiring registered nurses because of their greater flexibility. Several of the provincial registered nurse associations have indicated that the graduate nurse level will be a minimal requirement for entry into the nursing profession. It has been suggested that the nursing professions are becoming increasingly more complex and that there is a need for degree level training in the basic care situation. In contrast, members of the nursing assistant profession are seeking a clearly defined role within the nursing care concept, and are defining a broadened scope of practice for the profession. In addition a need for increased training has been identified. It is believed that additional training would allow the nursing assistant to accept greater responsibility in the provision of health care.

The Nursing Assistant profession has been perceived as a dead-end occupation. The development of career ladder progression training for registered nursing assistants has, to a degree, provided the opportunity for upgrading to registered nurse level. There is evidence, however, that relatively few nursing assistants choose to upgrade their skills. It is also significant to note that there is no career ladder progression training program available in the province of Alberta.

The future requirement for nursing assistants has been projected on the assumption that the traditional relationship between registered nursing assistant and registered nurse will continue. Although the trend for decreasing utilization of nursing assistants has been noted, it is believed that the projected shortages of registered nurses will result in an increased level of utilization of nursing assistants. Although employers may seek to hire registered nurses, constraints on supply of registered nurses may influence future employment patterns for nursing. If salary differential between nursing assistants and registered nurses widened in the future, there would be more incentive for employers to employ nursing assistants. There is, however, no evidence to indicate this trend is likely to occur.

RECOMMENDATION

Recommendation 10:

The Province of British Columbia should make efforts to increase the number of entry-level training outputs through reducing the current attrition rates of these programs.

Recommendation 11:

The Province of Alberta should increase the number of entry-level training outputs by the maximum amount possible in 1982 and should attempt to increase the size and/or number of its training programs to allow for an increase in trained graduates by approximately 20%-30% above planned levels in the longer term.

Recommendation 12:

The Province of Saskatchewan should increase the number of entry level training outputs by the maximum possible in 1982 and should attempt to increase the size and/or number of training programs to allow for an increase in trained graduates by approximately 15%-20% above planned levels in the longer term.

Recommendation 13:

The Province of Manitoba should increase the number of entry level training outputs by the maximum possible in 1982 and should attempt to increase the size and/or number of training programs to allow for an increase in trained graduates by approximately 15%-20% above planned levels in the longer term.

Recommendation 14:

The provinces of British Columbia, Alberta, Saskatchewan and Manitoba should carefully monitor the success of recruitment and retention strategies and the supply and requirement for nursing assistants in order to make any other changes required in training program size in 1985 or sooner.

C. PSYCHIATRIC NURSING

Occupational Role

The psychiatric nurse gives nursing care to mentally and emotionally disturbed persons, as directed by the physician by administering prescribed medicines and injections, by providing basic nursing functions, and by assisting the patient in developing self-confidence to participate in routine work functions, recreational, community and other therapeutic activities. The psychiatric nurse is normally a part of a treatment team consisting of psychiatrists, psychologists, social workers, occupational therapists and other specialists.

Current Situation

The training for psychiatric nursing is provided in either hospital based training programs, or alternatively college based training programs. At present, psychiatric nurses are trained at the college level in British Columbia and Saskatchewan, and in hospital based training programs in Alberta and Manitoba. The combined graduate outputs from both types of training are 300 graduates per annum in western Canada.

Findings

Currently the psychiatric nurse works in either the institutional or in the community setting. The role of this profession in providing nursing care to mentally and emotionally disturbed persons has resulted in several unique characteristics. The rate of labour turnover has been assumed to be equivalent to that of registered nursing and nursing assistants. There is little statistical data to measure the validity of this assumption, however, and it is possible that there are different reasons for the high level of turnover. It has been suggested that there is a higher rate of dropout of new graduates and a higher rate of career burnout. Conversely, it has also been suggested that there maybe a greater sense of career committment with some members of the profession.

The most significant factor which will affect the future requirement for psychiatric nurses in western Canada is the resolution of the basic function and role of the profession in the health care delivery system. To a degree, the relationship of the psychiatric nurse and the registered nurse with post-basic training in mental health nursing may become interchangeable. This could result in the legislated differences between the occupations being partially or totally removed, and the merging of psychiatric nursing into the registered nurse profession. This potential definition would result in a reassessment of the appropriate training mechanisms for the development of nursing skills for emotionally and mentally disturbed patients.

The projection of future manpower requirements has been based on the assumption that the historical role for psychiatric nursing will continue. Although recommendations have been presented for increasing training enrolments in the provinces of British Columbia and Alberta, no comment has been made on the training mechanism for psychiatric nursing.

RECOMMENDATIONS

Recommendation 15:

The Province of British Columbia should make efforts to increase the number of entry-level training outputs through reducing the attrition out of current programs.

Recommendation 16:

The Province of Alberta should, as a first priority, attempt to reduce the attrition rates out of existing entry level programs in order to increase the number of entry level training outputs in 1982-85 time frame.

Recommendation 17:

The Province of Saskatchewan should maintain the same number of entry-level training outputs and attempt to reduce the attrition out of the existing programs.

Recommendation 18:

The Province of Manitoba should maintain the same number of entry-level training outputs and closely monitor the attrition out of existing programs.

Recommendation 19:

That the provinces of British Columbia, Alberta, Saskatchewan and Manitoba should carefully monitor the success of recruitment and retention strategies and the supply and requirement for psychiatric nurses in order to make any changes required in training program size in 1985 or sooner.

III SUMMARY OF RECOMMENDATIONS

LIMITATIONS OF INFORMATION USED FOR PROJECTIONS

Recommendation 1:

That the provincial government manpower planners develop an information base for the nursing occupations to provide consistent, timely and accurate data for manpower planning purposes. Priority attention should be focused on developing an information base to include:

- uniform definitions of active and inactive nursing personnel;
- a methodology for accurately measuring the occupational shift factor including the movement of nursing personnel from active to inactive status, and movement in and out of the nursing professions;
- a methodology for monitoring and accurately assessing the pattern of migration, immigration and emigration of nursing personnel;
- uniform definitions of part-time and casual workers and accurate measurements of the average number of hours worked by each of these groups; and
- development of other information bases which would assist in validating trends in employment of nursing personnel and the range of requirements for nursing manpower in the future. This information should include the type and level of nurses

required to meet future employment demands, and trends in new employment settings for nursing personnel.

SUPPLEMENTARY MANPOWER STRATEGIES

Recommendation 2:

That provincial manpower planners in western Canada should conduct research projects to assess which types of short and longer term recruitment and retention strategies would likely be the most successful in increasing the supply of nursing manpower. This research should include the identification of controllable and uncontrollable factors which impact on recruitment and retention.

That education and health manpower planners in all four provinces should be consulted, and input should be sought from the respective nursing associations and from nursing employers.

That research into alternative manpower strategies should focus on the educational and organizational practice factors affecting recruitment and retention of nursing manpower.

REVIEW OF THE EDUCATION OF NURSING MANPOWER

Recommendation 3:

That research should be undertaken to examine the current educational programs for the nursing occupations. This research should include:

- an examination of the entrance requirements to training programs, the accessibility of these programs to all qualified candidates, and the prospective student selection process;

- an examination of the factors affecting the relationship between education and the practice of nursing in both institutional and community settings, and the educational experienced which affect a nurse's job expectations;

- an examination of the support or guidance resources within an educational setting and the extent to which these resources contribute to reducing the attrition out of nursing programs; and

- an examination of how the educational process affects the image of the nursing profession generally.

CO-ORDINATION OF NURSING MANPOWER STRATEGIES

Recommendation 4:

That the Western Region, through a new interprovincial committee, should coordinate health manpower planning efforts to recruit and retain nursing manpower.

Considerations should be given to coordinating the following:

- development of specialized training programs to meet the Western Region's need for management-level nursing

- compensation and benefits packages for both full-time and part-time nursing personnel, as well as any other financial incentives which may be considered to reduce shortages in particular geographic locations; and

- sharing information and results of pilot retention and recruitment strategies undertaken in each province and the development of long-term research projects to assess the impact of these strategies.

REGISTERED NURSES

Recommendation 5:

The Province of British Columbia should make efforts to increase the number of entry-level training outputs through reducing the current attrition rates of these programs.

Recommendation 6:

The Province of Alberta should increase the number of entry-level training outputs by the maximum amount possible in 1982 and should attempt to increase the size and/or number of its training programs to allow for an increase in trained graduates by approximately 20%-30% above planned levels in the longer term.

Recommendation 7:

The Province of Saskatchewan should increase the number of entry level training outputs by the maximum possible in 1982 and should attempt to increase the size and/or number of training programs to allow for an increase in trained graduates by approximately 20%-25% above planned levels in the longer term.

Recommendation 8:

The Province of Manitoba should maintain the number of entry level training outputs and should, if possible, attempt to further reduce the attrition levels out of training programs.

Recommendation 9:

That the provinces of British Columbia, Alberta, Saskatchewan and Manitoba should carefully monitor the success of recruitment and retention strategies and the supply and requirement for registered nurses in order to make any other changes required in training program size in 1985 or sooner.

NURSING ASSISTANT

Recommendation 10:

The Province of British Columbia should make efforts to increase the number of entry-level training outputs through reducing the current attrition rates of these programs.

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Recommendation 14:

The provinces of British Columbia, Alberta, Saskatchewan and Manitoba should carefully monitor the success of recruitment and retention strategies and the supply and requirement for nursing assistants in order to make any other changes required in training program size in 1985 or sooner.

PSYCHIATRIC NURSING

Recommendation 15:

The Province of British Columbia should make efforts to increase the number of entry-level training outputs through reducing the attrition out of current programs.

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The Province of Alberta should, as a first priority, attempt to reduce the attrition rates out of existing entry level programs in order to increase the number of entry level training outputs in 1981-82 time frame.

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That the provinces of British Columbia, Alberta, Saskatchewan and Manitoba should carefully monitor the success of recruitment and retention strategies and the supply and requirement for psychiatric nurses in order to make any other changes required in training program size in 1985 or sooner.

Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

EXECUTIVE SUMMARY
CATEGORY # 5 PHYSICIANS

EXECUTIVE SUMMARY - CATEGORY V OCCUPATIONS

EXECUTIVE SUMMARY

INTRODUCTION

The provision of effective health services to the community is dependent on three resources: an adequate supply of well trained staff; adequate facilities; and the availability of sufficient funds to ensure an effective health service. The recent expanded range and complexity of health treatment programs and increased requirement for skilled, adequately trained health practitioners have resulted in an increased emphasis on manpower planning and skills training to ensure an adequate supply of trained practitioners.

This report summarizes the study findings for physicians.

Physicians are primarily responsible for determining the health care services to be provided to patients. As a result, physicians have a significant influence on the requirements for other health professionals and on the cost of health services. It is therefore critically important to ensure that the numbers and skills of the physicians who comprise the medical workforce are appropriate for the needs of the population.

Subsequent to an examination of the training requirements for all physicians, the needs for general practitioners and specialists in each of the 39 medical and surgical specialties recognized by the Royal College of Physicians and Surgeons of Canada were assessed.

METHODOLOGY

To determine the training requirements for physicians in Western Canada the supply and requirements for physicians were projected to the year 2000. It was assumed that each province would wish to reach a balance in the supply and requirements of physicians and that this goal would be achieved through adjustments in the levels of training.

The future supply of physicians in the year 1981 to 2000 was estimated using the current supply of active physicians in each province and annually adjusting this supply to reflect changes resulting from migration, immigration, emigration, training output, shifts into other professions and retirement. A number of factors limit the accuracy of these projections. The supply adjustment which were made for migration, immigration and emigration were based on historical data which varied significantly over the period studied; trends derived from this information may not reflect the future pattern of physician movement.

As the sizes of the physician groups under examination decrease, the possibility of inaccuracies increase. For example, the supply projection for all physicians in British Columbia can be expected to be more accurate than the Saskatchewan projection for the supply of orthopedic surgeons.

To determine the requirements for physicians, the recommendations of a previous Canadian study was relied upon heavily. This study, prepared by the National Committee on Physician Manpower and titled "Requirements for Physicians in Canada", assessed national utilization data for the years up to and including 1973, to determine the medical services that will be required by the Canadian population to the year 1981. The number of physicians required in the various specialties was then determined from the data on projected medical services. The service target ratios which the National Committee on Physician Manpower derived from this analysis were adjusted to reflect the medical requirements in Western Canada. This adjustment increased the proportion of general practitioners and decreased specialists from that recommended by the National Committee such that 55% of physician supply would be general practitioners and 45% certified specialists. This apportionment closely reflects the current situation in Western Canada. Other factors were considered in determining the need for this adjustment.

The lower population density of Western Canada, when compared with the country as a whole, favours a health services delivery system which makes greater use of the broad capabilities of general practitioners. A second factor involves the experience of the contributors to the "Requirements for Physicians in Canada" report. A significant majority of the contributors were certified specialists who hold teaching appointments and practice at large urban tertiary care centres where the provision of medical services relies heavily on use of specialists. It is believed that their familiarity with this approach to the delivery of medical services may have influenced the National Committee in their determination of the appropriate balance between general practitioners and specialists.

BACKGROUND

There are several major issues which will affect the future supply and requirements for physicians. These issues are summarized below and general recommendations presented.

Medical Training Output

If the trends upon which the physician supply projections were based continue, the current supply of approximately 11,000 active physicians in Western Canada will increase to over 16,000 by the year 2000. This manpower increase will exceed the requirements of the growing population of Western Canada. The surplus of physicians is projected to rise from its current level of approximately 500 to 2,000 in the year 2000.

The output of the graduate medical education programs at the five medical schools in Western Canada must be adjusted if the projected manpower surpluses are to be avoided. As the projected surpluses will not be distributed evenly throughout the four western provinces, training responses must be sensitive to the needs of each province.

Recommendation #1:

To achieve a balance between the requirements and supply of active physicians in Western Canada by the year 2000, the level of enrolment of medical students should be reduced by 25-30% in 1983. The number of students annually entering medical schools in the region would decline from 469 to between 330 and 350.

Recommendation #2:

If each province is to be responsible for training sufficient physicians to meet its projected requirements, the following provincial training adjustments are required:

- British Columbia should reduce enrolment from 120 to 60-70 in 1983.
- Alberta should reduce enrolment from 190 to 140-145 in 1986.
- Saskatchewan should increase enrolment from 64 to approximately 100 in 1983.
- Manitoba should reduce enrolment from 95 to approximately 60 in 1983.

Although these recommendations indicate the need to reduce many of the provincial enrolments immediately, it may be more appropriate and more acceptable to introduce a phased plan of gradual reduction over several years. This is recognized as a reasonable and practical approach to accomplish the objective of reducing the anticipated physician surplus.

The current levels of specialty training are a response to the increasing complexities of medical knowledge and the resulting trend towards specialization in particular fields of medicine.

The educational system has trained a sufficient number of practitioners in the specialties to eliminate many of the historical manpower shortages.

If large manpower surpluses are to be averted in several medical specialties, significant reductions in the current levels of residency training are necessary.

The data indicates the need to reduce specialty training by as much as 50% in 1983 if the supply of specialists is not to exceed the requirements in the year 2000. This initial observation does not take into consideration such factors as the need to maintain the viability of key residency programs. Such factors have been considered in the development of the provincial recommendations for each of the training programs.

Recommendation #3:

> Based on a tabulation of the recommendations related to residency training in Western Canada, the annual output of residents should be reduced from the current level of 275 to approximately 175 in 1983.

Once again, a phased approach to the introduction of these reductions could also be considered.

Increasing Number of Women in Medicine

Presently, approximately 15% practicing physicians in Canada are women. This figure is projected to increase to 40% in the next 30 years.

Currently, women comprise approximately 50% of the medical schools' students.

Two studies conducted in the United States and Quebec have indicated that female physicians provide approximately 30% fewer services than their male counterparts.

While it is not clear whether this trend reflects the volume of services that individual female practitioners will provide, this factor has the potential to influence the requirements for physicians to a greater extent than any other. It will be necessary to monitor the participation of women in the medical workforce so that training output can be adjusted to compensate for any significant trends which emerge.

Migration

While the number of physicians entering and leaving Canada has been reduced to an insignificant level, the migration of physicians between provinces continues as the major factor responsible for the manpower supply inbalances in the western provinces.

If a province is to achieve a balance in its supply and requirements for physicians, migration patterns must be taken into consideration in determining the appropriate level of training.

The recommendations contained in this report regarding adjustments in training outputs are, in large part, responses which will compensate for the current patterns of physician migration.

Large and expensive increases in the size of medical schools in provinces experiencing net outward migration are not satisfactory solutions. Reductions in the size of medical training programs to a level at which a province becomes dependent upon in-migration as a source of new physicians are similarly undesirable. Migration patterns may vary significantly as manpower surpluses grow in various parts of the country and as individual provinces attempt to place restrictions on migration.

To increase the effectiveness of physician manpower planning, the western provinces may wish to further assess the factors which influence physician movement within Canada and to explore the feasibility of controlling the migration of medical manpower into areas where oversupplies are anticipated.

Recommendation #4:

> The need for controls over migration should be evaluated once the training output of medical programs elsewhere in Canada has been adjusted as a result of the recommendations of this and other reports.

Improving the Data Base

The ability of manpower planners to accurately define future physician requirements is limited by shortcomings in the Canadian data base related to the profession. The development of projections for physician supply and requirements was complicated by these shortcomings. The "Requirement for Physicians in Canada" report comments at length on the limitations of the data which was available in 1973.

Given the importance of the medical profession in the delivery of health care services and the large amount of data which is collected, but which does not undergo manpower planning analysis, it is unfortunate that the provincial governments have not achieved greater success in overcoming data base deficiencies.

The data base recommendations provided in this report focus on the need for uniform data to facilitate interprovincial comparisons, an accurate reporting system to define the number and activities of fee-for-service physicians, the need for additional information on non fee-for-service physician activities, and improvements in the data collected related to utilization and training.

Future Manpower Planning Requirements

This report suggests that data which will confirm the projections upon which the training recommendations are based be collected and analyzed at five year intervals to identify variances. These findings could then be used to determine whether any further adjustments in the levels of training are required.

It should also be recognized that a lengthy period of time is required to train a physician. As a result, medical manpower training strategies must identify long term solutions which respond to the projected future requirements.

With respect to the recommendations of this particular report, the impact of the adjustments to training outputs will not begin to influence the supply of physicians until 1987. These adjustments are to remain in effect from 1983 to 1996.

Apart from the need for further adjustments to the training outputs in response to new trends which may be identified, it will be necessary to initiate a similar manpower planning exercise in the early 1990's to determine the appropriate enrolments for medical training programs subsequent to 1996.

Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

Section II – Report A

HEALTH MANPOWER PLANNING APPROACHES

Report A - HEALTH MANPOWER PLANNING APPROACHES

SECTION II - REPORT A

HEALTH MANPOWER PLANNING APPROACHES

JANUARY, 1981

HEALTH MANPOWER PLANNING APPROACHES

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1.0 INTRODUCTION

1.1 Purpose of Report

One of the initial activities undertaken in this study was a comprehensive review of current literature dealing with the various approaches to health manpower planning. On the basis of this review, a methodological approach was developed for analysing manpower supply and requirements, and estimating net requirements within the context of the terms of reference for this study. The availability of data from the four western provinces imposed a constraint on the range of approaches which could be used.

The purpose of this report is:

- to review different approaches to health manpower planning
- to review sensitivity analysis as it pertains to developing alternative strategies and solutions in analysing net manpower requirements
- to review the Western Health Manpower Model, and the specific approaches used in this study.

1.2 Definition of Manpower Planning

Prior to discussing various approaches to Manpower Planning, however, a definition would be appropriate. In the publication by the United States Department of Health, Education and Welfare,[1] Health Manpower Planning is defined as:

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[1] Health Manpower Planning Process, DHEW Publication number (HRA) 76-14013, p. 3.

- a process whereby goals, objectives, priorities, and activites for health manpower development are determined in a systematic fashion, in order to ensure that health manpower resources both current and future, are adequate to meet the requirements for the delivery of health services to population.

To achieve this goal, four key factors are identified which must be considered:

- Manpower supply/requirement
- Manpower distribution
- Manpower utilization
- Manpower productivity

The interaction between these four factors permits a comparison between the manpower available and the manpower required, which in turn leads to conclusions as to the appropriate course(s) of action necessary to alleviate any imbalance in manpower.

2.0 APPROACHES TO ESTIMATING HEALTH MANPOWER REQUIREMENTS

2.1 Derived Demand

Typically, the demand for health manpower is derived from the demand for health services. In turn, the demand for health services, broadly speaking, is a function of the health status of the population, psychological want, consumers' and governments' willingness to pay, and characteristics of the health system. The relative importance of these factors varies according to the methodological approach chosen, as well as the manpower group being considered. Some of the conclusions which have been reached concerning the impact of these factors is summarized below.

- Demographic factors - The range of demographic factors which have been found to affect health manpower include age/sex distributions, population size and density, population growth rate, marital status and family size.

- Economic factors - A strong positive correlation exists between income and demand for health care, specifically cost of health services and ability to pay. Additionally, non-monetary costs such as travel time are relevant.

- Socio/cultural factors - Educational attainment seems to be related to level of health consciousness, as is cultural background related to health attitudes.

- Health status factors - The perception of illness and acknowledgement of sickness affect the decision to seek health care services.

- Accessibility - Ease of access to health care facilities influences the type of care sought and contributed to the decision to seek health care services.

- Resource Availability - Demand presupposes a supply of facilities and personnel. At the level of the individual practitioner, the practitioner is a major factor in determining the quantity of services consumed.

- Health Care Technology - The availability of technology to assist the practitioner in the delivery of services has an impact on the services offered and the level of manpower required to produce the services.

- Health Care Delivery System - Changes in the strategy of health delivery, for example in-versus outpatient contact, result in shifts in the demand for care.

2.2 Terminology

The approaches used to analyse the supply of, and demand for, health manpower are widely divergent. The choice of a particular approach depends on a number of factors, including:

- the degree of government involvement in Health Planning; in particular, the degree to which government has the means to effect changes in the production, utilization and distribution of health manpower.

- the quality of the available data.

- the degree to which the results are compatible with social, political and economic constraints.

Prior to discussing the various approaches, however, certain concepts which affect these approaches should be defined.

- Needs - estimates of the number of workers necessary to provide an optimum standard of care based on professional judgement and current medical technology.

- Wants - as contrasted with "Needs," "Wants" refer to the level of health manpower to which the population feels it ought to have access without consideration of costs. A consumer's physiological "Wants" may differ from professionally determined "Needs".

- Demand - the level of health manpower that consumers or employers use given price structures and financial resources. "Wants" exceed "Demand" when there are insufficient resources to purchase.

Each of the above concepts however, have implicit value judgements associated with them. A neutral term which avoids this difficulty is defined as :

- Requirements - the level of health manpower required to satisfy a given set of assumptions regarding the provision of health services. The magnitude and composition of requirements are not only specific to the population, but also to the level, intensity and quality of health services, the delivery system and the prevailing modes of manpower utilization.

Each of these concepts leads to quite different approaches to estimating health manpower requirements. The methods differ in the way in which the health sector is seen to operate, and the forces that control its development. It is usually preferable to use a combination of methods in estimating manpower so that a range of scenarios is developed.

2.3 Health Needs Approach

As described above, the health needs approach seeks to estimate the level and quality of service requirements deemed necessary to obtain a healthy population. These esimates are developed through expert professional opinion, given available technology. Needs are translated into manpower by staffing and productivity standards. The first step in this approach is to determine the incidence of disease occurring by disease category. Treatment norms are then established for each service and diagnosis, taking into account factors such as the nature and content of care required, the number of visits and time per visit. A determination of the types of health personnel required to deliver this service and staffing norms leads to a conversion of services into time estimates for each manpower group. The total hours needed in the target year to provide the required services, based on disease specific morbidity rates, is divided by the average number of hours worked annually per person per occupation, to arrive at an estimate of health manpower required.

One of the large scale needs studies was conducted by Lee and Jones in 1933 for the United States Commission on Costs of Medical Care.

Exhibit 1.1 Summary of Advantages and Disadvantages
Health Needs Approach

Advantages

- logical, in that it starts with the disease patterns in the population and translates them into health manpower
- allows for disaggregation
- permits allocation of resources where they potentially would have the greatest effect.

Disadvantages

- wide divergence exists among professional experts as to the best or most appropriate methods of treatment
- doesn't consider the impact of consumer tastes and resource constraints
- tends to overstate manpower requirements
- standards for services don't consider general level of health
- clinical determination of services is based on averages rather than characteristics of group at risk
- fails to yield insights into modifications required in the health system
- costly and time consuming
- sophisticated computer techniques to quantify needs, services and requirements are needed.

It estimated the need for physicians by specialty. Currently the Graduate Medical Education National Advisory Committee in the United States is conducting a needs-based study in an effort to make recommendations on the present and future supply of twenty-two medical specialties and their geographic distribution, for financing graduate medical education. The Committee is using twenty-two expert panels and additional technical panels to arrive at needs-based requirements which are adjusted to account for the proportion of persons within each disease category likely to seek service. For needs-based approaches to be effectively used, certain conditions must be met, including:

- existence of a comprehensive data base containing epidemiological information on the relationship between demographic and socio-economic factors and disease morbidity.
- the availability of productivity data for each specific occupation
- a willingness by government to take a major role in shaping the health delivery system.

In summary, the advantages and disadvantages of the Health Needs approach to estimating Health Manpower Requirements are shown opposite in exhibit 1.1.

2.4 Health Demands Approach

Demand based models attempt to relate requirements for health manpower to selected economic and demographic variables which are considered to influence the demand for health services.

Some of the specific approaches which have been developed are discussed below.

Budget Vacancy Approach

The basis of this approach is a survey of employing institutions to assess the agency's perception of its present and future manpower requirements. It assumes that the employers of health manpower are in the best position to assess how many employees they will employ. Additionally, it implicitly assumes constant utilization and productivity patterns. The approach can be expressed by:

- $R = N + V + P + A$

where:

R = requirement
N = manpower now employed
V = budgeted, but unfilled positions
P = new positions
A = positions vacant due to attrition

Demographic Approach

Efforts using this approach attempt to analyse service utilization rates according to various demographic factors such as age, sex, education, marital status, and population density. The observed utilization rates are then applied to the forecasted composition of the population, in terms of the chosen demographic factors. Changes in utilization are attributed to changes in the size and composition of the population. These forecasted utilization rates are then translated into manpower requirements on the basis of staffing and productivity standards.

It is assumed that the relationship between services demanded and manpower required to provide them, will continue in the future. This is reasonable if no large inequalities in access to care exist. Additionally, no provision is made for economic factors such as income, method of financing health services, and price charged for services.

Economic Approach

In addition to focusing on demographic factors, these studies also focus on the willingness and the ability of consumers, or an identified community, to pay for health services as the basis for determining health manpower requirements. Demand for services is forecasted as a function of:

- income and prices
- non-monetary costs of obtaining services (such as travel time)
- health insurance and prepayment plans
- demographic profile.

Income becomes somewhat less important as an economic factor if comprehensive medical and health insurance programs are in existence.

As in the demographic approach discussed above, utilization rates are obtained for various population sub-groups. The future population data is then projected, and estimated utilization rates are derived for each population sub-group. While providing economically realistic projections which are historically consistent, it is difficult to obtain reliable data on the relationship between income and health expenditure. These studies

Exhibit 1.2 Summary of Advantages and Disadvantages of Demand Based Approach

Advantages

- comprehensive view of utilization dynamics
- realistic in that it reflects preference of consumers
- permits disaggregation of components of demand.

Disadvantages

- difficult to assess performance of health care system (distribution of manpower, quality of service, appropriateness of health service)
- unlikely to lead to manpower development to meet unmet needs
- potentially complicated, costly, and requires sophisticated data
- does not consider ways to improve productivity.

usually employ regression techniques to estimate the demands for health manpower.

Macro-Economic Approach

Still another variation within the economic approach is to link demand for health manpower with the general structure of the economy. Investment driven models, yielding GNP estimates by industry, are used to project output by sector. Labour/output ratios are used to convert sector output into labour requirements. Similarly, labour requirements can be converted into occupational requirements based on industry/occupational matrices.

Summary of Demand Approaches

The four approaches described above constitute those most commonly used to estimate manpower requirements on the basis of demand for health services.

The major advantages and disadvantages of demand approaches are summarized in Exhibit 1.2, opposite.

2.5 Service Target Approach

This approach emphasizes the identification of deficiencies in the health system and the setting of targets, based on an evaluation by health professionals and planners of the desirable level(s) of service. The established targets are converted into manpower requirements by means of staffing and productivity standards. This necessitates, of course, the identification of the type and amount

Exhibit 1.3 Summary of Advantages and Disadvantages of Service Target Approach

Advantages

- facilitates closer adjustment of health delivery to needs/demands
- flexible
- permits disaggregation
- less stringent data requirements
- facilitates consideration of cost implications
- emphasizes productivity.

Disadvantages

- permits discretion in departing from extrapolations
- potential for errors of judgement in estimating productivity, and the capacity to deliver and distribute services
- potentially unrealistic in that consumer wants are not considered.

of service each group of health manpower provides. Each component of the health sector can be considered independently of the others, and potential constraints of specific health programs and the health care delivery system are taken into account. This can lead to a consideration of alternative forms of organization and staffing levels for the delivery of health care. The approach does, however, presuppose that government takes an active role in the development development and provision of health services. The major advantages and disadvantages are presented opposite in Exhibit 1.3.

2.6 Manpower/Population Ratio Approach

The most frequently used method of estimating manpower requirements is the manpower/population ratio. The observed or desired manpower ratio is used as the basis for deriving estimates of manpower requirements. The ratio is applied to the target population on the assumption that a change in the population size requires an equal change in the number of health care personnel. The most frequently chosen ratios include:

- current observed manpower/population ratio
- extrapolation of historical trend
- the ratio in the region with the most favorable ratio
- international comparisons
- that which expert opinion deems appropriate.

The numerator in the ratio is the number of practitioners in the occupation or cluster under consideration. The denominator is either the population in the total community, or that in the specific group of interest. For example, the number of people aged 65 or over might be the population of interest in an analysis of

Exhibit 1.4 Summary of Advantages and Disadvantages of the Manpower/Population Ratio Approach

Advantages

- simple data requirements
- low cost
- easy to understand and apply.

Disadvantages

- ignores factors such as organization of health delivery, productivity, changing demographic composition of the population, health funding
- little explanatory value of how health care system works
- no consideration of factors affecting demand
- no consideration of the contribution of the ratio to the health status of the population.

nursing home aides. The advantages and disadvantages of this approach are summarized in Exhibit 1.4, opposite.

3.0 APPROACHES TO ESTIMATING HEALTH MANPOWER SUPPLY

3.1 Introduction

Concurrent with the estimation of manpower requirements, analysis of manpower supply is undertaken in order to assess the degree of congruity and identify any imbalances. Presence of an imbalance does not necessarily imply a shortage of manpower, but may be due to maldistribution, poor utilization or poor productivity.

To assess the supply of manpower, it is necessary to understand the occupational manpower system with respect to the process of entering the profession, movements while working in the profession and the expected length of stay.

The major factors which affect the process by which candidates enter an occupational group include the training system (either informal or formal, depending on how skills are acquired) and credentialling/certification requirements. Within these factors, variables such as the length of the training program, size of the program, limitations on the number of certified practitioners, or restrictions on inter-regional movements constitute potential constraints.

Factors which affect movements within the occupational group include the number of employers, mode of manpower utilization, work location, working conditions and hours of work, compensation strategies, career structure, perceived status of occupation, and other intangibles. Modifications in hiring practices, manpower utilizaton, productivity, work location, and compensation have been employed in attempt to adjust manpower imbalances.

Finally, characteristics of the practitioners affect manpower supply. Factors such as age, sex, marital status, entry/separation rates, mobility, labour force participation rates, locational and occupational decisions place constraints on the supply of manpower.

3.2 Current and Potential Supply

A distinction may be made between the current supply of manpower and the potential supply of manpower. The current supply is defined as the number of active practitioners who are currently employed or actively seeking employment in an identified occupation. The potential supply of manpower is those active employees, plus those who are inactive but who might be attracted into the labour force or into the occupational group if the working conditions or personal circumstances permit. An example would be those nurses who are currently registered but not actively working, nor seeking employment, but have assumed the role of a housewife or homemaker. At some point in the future, when their family has reached the point where the children are in school, it might be possible for these people to return to work.

Estimation of Current/Potential Supply

In estimating current and potential supply, it is necessary to estimate the individual components of supply and then to add each component together to come up with a total picture. As mentioned above, those employed, and those unemployed who might potentially become employed in the field, must be considered. Dependent on the occupation, the unemployed, while often ignored as being an insignificant factor, do in fact constitute a major segment of the supply market. Another factor that must be taken into account is the number of part-time workers. Considering part-time workers to

be the equivalent of full-time workers leads to an over-estimation of the manpower supply. Therefore, data on the hours or days per week worked per employee is necessary to convert the part-time workers into full-time equivalents.
An adjustment must also be made for manpower who are currently engaged in research, teaching, administration, and other activities which are not directly related to the provision of primary services. The problem of estimating supply is compounded frequently by factors such as noncomparability of data, different time frames used for estimating supply, varying concepts of supply, and occupational definitions.

Information about current and potential supply can be obtained from a number of sources. Some of the more frequently used sources include:

- survey of employer and employment centers
- survey of the health professionals in terms of assessing personal characteristics
- survey of those who have either left the workforce or whose departure may be imminent.

3.3 Future Supply

The basic process for estimating future supply is to attempt to assess the movement of personnel into and out of the current supply manpower. The various inflows and outflows are presented below:

Inflows

- graduates
- those transferred from other occupations
- workers re-entering the labour force
- in-migration
- immigration.

Outflows

- death
- retirement
- transferred to other occupations
- out-migration
- emigration
- temporary withdrawal from the labour force.

Each of these is considered in more detail below.

Inflows

- Graduates - Typically information on the number of graduates from training programs is readily available. It is useful to identify the number of applications received, enrolment standards, attrition during the program and the number of graduates. Additionally, it is important to be aware of the licensing procedure, specifically, is it automatic or are there limits imposed on the number of active practitioners?

- Occupational Transference - If possible, the number of practitioners who have transferred into an occupational group should be identified. This is sometimes available from the licensing or certification body. Credentialling requirements may, however, present major barriers to occupational movement. In certain instances there is a stipulation that practitioners must graduate from an approved educational program. Additionally, career structures may be affected by the licensing requirements. Occupational mobility is often investigated using longitudinal studies which attempt to estimate occupation - specific mobility rates.

- Re-entrants - Health occupations tend to be dominated by females, which leads to potentially substantial reserves of inactive manpower. Women have historically moved into and out of the labour force in response to changes in family obligations (age of children or husband's income have been two major factors). In some instances, re-entry may be affected by retraining requirements and working conditions. Working life tables, which provide labour force participation by age and sex, and by occupation give an indication of the potential size of the inactive workforce.

- Geographic Mobility - In the context of inflows, geographic mobility refers to in-migration and immigration. Longitudinal data is often used as a basis for estimating these flows, as is the number of applications for licences to practive in an area. Certification and licencing procedures may impose constraints on these movements.

Outflows

- Outward movements - Manpower outflows which result from transferrals to other occupations, out-migration, emigration, and temporary withdrawal from the workforce, are difficult to estimate. Professional associations usually record the number of practitioners who drop their licence without identifying the reason.

- Death/Retirement - A number of techniques have been used to attempt to estimate the impact of death or retirement on manpower supply. Typically no distinction is made between the reasons for attrition. A brief description of the more commonly used approaches is provided below.

  i. Simple determination of average working life. For example, if the average working life is assumed to be 40 years, then 1/40 of the stock or 2.5%, is assumed to retire or die each year. This is valid only if the number of people at each age level is equal.

  ii. Tables of working life represent a more refined method of estimating death and retirements. Labour force participation rates of an initial group of 100,000 people at 16 years of age shows the attrition caused by withdrawals from the labour force and mortality. These tables exist for both men and women, to account for death and retirements at each age level for various occupations.

  iii. The age cohort method basically employs cohorts of graduates comparing the number in an initial cohort with those found to be professionally active at a more recent time. This takes account of all sources of loss from each cohort. To use this method, data on the number starting in a cohort and the number remaining active at some future time is needed.

3.4 Techniques for Estimating Manpower Supply

A number of methods have been used to estimate supply, and are briefly described below:

Deterministic Approaches

These approaches attempt to establish the inflows and losses from a manpower system by the use of deterministic equations of the form:

$S_t = S_{t-1} + G_{t-1} + I_{t-1} - A$, where,

S_t: current manpower stock
S_{t-1}: manpower stock at the previous point in time
G_{t-1}: number of graduates during the time period
I_{t-1}: inward movements during the time period.
A = attrition

These approaches can either use the number of practitioners in the active stock or the percentage of practitioners in the given category. Additionally, there is usually a capability to take account of any trend in manpower.

Statistical Simulation Model

Two common techniques used in this approach are markovian transition probabilities or regression techniques. The General Manpower Stock Simulator (GMSS), which was developed at the Health Manpower Research Unit, University of British Columbia, is an example of an approach based on markhov chains. Movement into each state of the model and the attrition associated with that category are estimated based on these transitional probabilities, and are conditional upon age, geographic location, and occupational classification. The different states that an individual practitioner could occupy in the model are: training, active practitioner, postgraduate training, and inactive practitioner. Various statistical approaches which utilize regression analysis have also been developed. These approaches tend to focus on one component of supply, such as additions/losses to stock, educational/occupational choice, labour force behavior, geographic locational decisions, occupational specialty decisions, or manpower utilization.

Additional Approaches

In certain instances, detailed information on the inflow and outflow of manpower is not available. In such cases, trend analysis has been used in an attempt to assess changes in manpower supply. In essence, it attempts to analyse the net change in manpower based on historical data. The difference between the supply of manpower at one point in time and the supply of manpower at the next point in time, represent all the forces which are operating to increase or decrease supply. The individual factors which account for this cannot be identified. The net change in manpower supply is determined by an analysis of the trend in the total supply, using the basic regression equations: $Y = a + bX$.

4.0 INTERACTION OF SUPPLY/DEMAND

4.1 Introduction

One of the common problems associated with estimating supply and demand is the difficulty of taking account of the interaction between the components of supply and demand. The supply of new procedures, equipment, or drugs could create an increased demand for health services, and thereby increased manpower requirements. Conversely, excess demands can lead to task delegation and the introduction of new technology to compensate for the unavailability of required manpower. Ideally therefore, projections of supply and demand should attempt to take account of the potential interaction between these two major components.

4.2 Models of Health Care Systems

A number of attempts have been made to model the interactions between various components of the health manpower market. Such approaches attempt to identify the major factors in the context of the health manpower market and then to investigate systematically, the potential effects or interactions of these factors.

The factors which have been investigated are those discussed in the previous sections and include consumer behavior, labour market, medical technology, training, health care delivery systems, and prepayment schemes.

4.3 Approaches to Estimating the Interaction of Supply/Demand

A number of approaches have been developed to investigate the interaction of supply and demand, and a discussion of some of the more common approaches is provided below.

Classical Econometric

This approach tends to deal with the health care market at a macro level. The equations which are used are solved simultaneously, and examine the effects of alternative government programs on the demand/supply relationship. One of the studies using this approach was conducted by Feldstein and Kelman. It models the market for medical services, the labour market for health personnel, health training, and the market for medical capital. Using these various markets the demand for manpower is derived under various scenarios.

Simulation

Certain simulation techniques have been developed which analyse the relationship between supply and demand, at the level of the individual patient and provider. Markov techniques are sometimes used to estimate the probability of a number of discrete events. The model is run a number of times with various sets of data, and the results are aggregated to provide a picture of the supply/demand relationship.

Feldstein and Yett working at the Human Resource Research Center, have developed a micro-simulation model of the U.S. health care system. The approach is to model the demand for and the supply of services, and the market interactions. The resultant process is one of resource allocation. Feedback mechanisms in the model allow the effects of a change in one sector to be transmitted over time to another sector.

The Research Triangle Institute has developed a simulation of hospital utilization and health manpower requirements. Population projections and utilization data for short term general hospitals are combined, to derive Manpower requirements projections.

Systems Dynamics

The Bureau of Health Manpower has developed a prototype of a systems approach. A large structure of arc feedback loops of cause and effect relationships is developed. An initial set of variables is used as the starting point and a rate of change is identified for each variable. A series of differential equations is then developed which treats all processes as continuous flows.

Optimization Models

Currently, no general models of this type exist but this approach may have some limited applicability. Basically, a solution is sought which maximizes some utility functions or minimum cost requirement. They consider supply/demand constraints when resources are scarce, and provide the most economial means of producing specific medical outputs.

5.0 SENSITIVITY ANALYSIS

5.1 Introduction

As indicated in the previous section, an important consideration in the estimation of manpower supply and requirements is some indication of either the potential interaction of these two major components, or the impact of alternative policies and programs. In sensitivity analysis, the underlying assumptions of the model are systematically changed to test the sensitivity of the final results to the adopted assumptions. Sensitivity analysis provides a means by which the planner can learn how responsive the estimates are which have been developed to indicate changes in particular variables, the seriousness of potential errors in a variable upon the final estimates, and the impact(s) which alternative policies may have upon the projected supply and requirements.

5.2 Process of Sensitivity Analysis

The basic approach to sensitivity analysis involves three steps:

- the first step is to select those input variables and their adjusted values that are to be used in the sensitivity analysis

- decisions on the criteria to be used for the degree of change that will be considered high, low or moderate sensitivity must be made

- the final step is to measure the amount of change in the estimates as a result of varying the defined value of the input variables.

This analysis should be applied several times. Each time, one assumption parameter is varied and the others are held constant. The effect of this variation on the final estimate of manpower supply and requirements is recorded. An important advantage of sensitivity analysis is that if properly applied, the planner is in a better position to interpret the results of the analysis, and thereby, make more informed policy recommendations.

6.0 ALTERNATIVE STRATEGIES AND SOLUTIONS

6.1 Introduction

Historically, the overriding solution to anticipated manpower shortages has been to increase the level of training output. It may be inappropriate to expand training capacity if the shortage is short-term in nature. Rather than restore balance, such a policy could result in excess training capacity in the long-run. In other instances, the imbalance may arise from demographic factors, or from occupational disincentives that would not be rectified by increased training output.

A number of alternative responses to manpower shortages exist in the form of increased productivity, more attractive occupational incentives, and expanded manpower mobility. The purpose of this section is to explore the potential for each of these alternative responses to reduce manpower imbalance.

6.2 Productivity

Productivity of manpower is a measure of the "output per unit of input resources". The output of health manpower is measurable through a number of variables, including medical services or procedures, patient contacts or visits, hospital admissions or separations. Resource inputs are factors used in the production of health services, such as health manpower, equipment, and drugs. An increase in manpower productivity will occur if the same unit of output can be produced using less of at least one input, and no more of the others. A productivity increase effectively raises the level of output, with no accompanying increase of inputs. Increased productivity is an alternative response to a manpower shortage, since more output can be produced using the same level of manpower.

The manner in which inputs are combined to produce one unit of output is the technological relationship. Usually, one unit of output can be produced through a variety of technological relationships, using different quantities of inputs, or by introducing a new type of input. Changes in these technological relationships are at the heart of productivity increases.

Manpower productivity can be improved from a number of sources. More expensive manpower can be replaced by cheaper inputs including capital equipment, and less highly trained labour. Organizational or procedural changes can be time-saving, thus enabling the production of greater output in the same time period. Process and product innovation can affect the technological relationship and also result in the creation of new outputs and inputs. Each of these potential sources of productivity improvement is examined below.

Input Substitution

The substitution of highly specialized labour by less extensively trained manpower to undertake simple medical or clerical tasks, results in a more effective utilization of costly manpower. In effect, more services will be provided by the stock of specialists, without increasing their numbers. The potential for input substitution will be limited by the extent to which the manpower in question is technically interchangable, and by the cost-saving gained through their substitution.

Input substitution can also be achieved by replacing certain labour functions with capital equipment. Additionally, patient participation can reduce the requirement for skilled manpower, since it replaces the specialist's knowledge with the patient's own regarding preventive and prescribed care. Indeed, one of the most significant contributors to improved physician productivity has been the substitution of the patient waiting and travel time for the physician's, through the virtual elimination of house visits.

Mode of Practice

Organizational changes in practitioner practice may be potential sources of productivity increases. The formation of group practices can ostensibly lead to some economies of scale in the use of practitioner time. Whereas a solo practitioner may be unable to justify the employment of various health auxiliaries and allied personnel, the pooling of resources in a group practice can facilitate input substitution. Similarly, capital equipment can be purchased more readily as a group, and the efficient use of each machine will be enhanced through greater utilization.

A practitioner's mode of practice also encompasses the hours worked per week, vacation time and age of retirement. Specialization of the type of clinical activity handled by the practice in any given day, or in general, can further contribute to the productivity of manpower. An important change in mode of practice has been to provide an increasing number of services in institutional settings as opposed to clinics or offices. An institution organizes patients with similar complaints within a small geographical space, and also permits access to highly specialized equipment, with the potential for their intensive utilization.

Technology

Technological advances in health care have historically wrought great change in the provision of services; future discoveries and innovations represent a likely source of enhanced productivity. Examples of significant technological change include "the elimination of water-borne diseases, the virtual disappearance of contagious diseases from smallpox to polio, diagnostic devices from the stethoscope to computer-assisted EKG readings, and therapeutic tools from anaesthesia to cobalt units."[1]

Improvements in technology lead to more efficient utilization of scarce resources, enable the substitution of expensive inputs, and introduce new procedures and new inputs. The prospects for future advances in health technology are particularly bright in the areas of pharmacology, immunology, bio-medical engineering, communications and computer science. The rate at which new technology is adopted will differ depending on promotional activities, familiarity of the health profession, availability and initial cost.

6.3 Occupational Incentives

The supply of health manpower is a function not only of the gains from training output and mobility, but also of the losses from the occupation. These losses can arise from: temporary withdrawals from the labour force; low demand for a particular occupation; uncompetitive salaries relative to jobs outside the health sector; institutional rigidities limiting flexible hours and part-time work; perceived status of the occupation, and the possibility of career mobility. An appropriate response to manpower shortages generated by significant losses due to these causes may be to alter the causes of the problem, rather than funnel more resources into increased training and output.

[1] Geomet, Inc., Report #R-163. The Impact on Future Health Manpower Requirements and Supply of Increasing Productivity Through Use of Technological Advances, for Bureau of Health Manpower Education, Department of Health Education and Welfare, United States of America, Contract No. NIH.72-4408, August, 1974

The relative level of compensation between occupations is a combination of monetary and non-monetary factors. The monetary aspect is composed of direct wages or salary, and employment benefits. The prospect for future increases in earnings may be as important as the initial salary. A number of prominent considerations among non-monetary factors include intellectual satisfaction, professional commmunication and commitment to the occupation itself.

The level of compensation paid to a specific occupation serves as a market signal, to both potential entrants and to existing professionals, as to the desirability of entering or remaining in the profession. Actual or perceived differences in compensation for work of similar complexity and responsibility may induce exit from the occupation, and will discourage qualified candidates from becoming trained in that discipline. Unless the intention is to reduce a manpower surplus, a long-term solution to losses arising from relative compensation differences, rests with a re-evaluation of current salary levels.

Employment Practices

Many health occupations are dominated by female workers. The flexibility of employment practices will be instrumental in the decision of these workers to remain active during their child-bearing years. The possibility of part-time employment, while balancing the requirements of both family and career, will encourage a number of women to remain partially active when they might otherwise not work. In addition, the availability of adequate day-care facilities will facilitate movement from the home into the workforce.

The working condition of the place of employment may also be a factor in retaining manpower. Access to facilities, supplies and equipment will influence retention, as well as attract employees.

Finally, discriminatory practices will also reduce the potential size of the workforce.

Perceived Occupational Status

The prestige and value placed by society on an occupation relative to others in the health field and outside will exert pressure on the desire to train in that area. The reclassification and redefinition of positions represent potential strategies to this problem.

Career Mobility

Possiblities for promotion and advancement influence the attractiveness of an occupation, or the length of time spent within it. Access to upgrading programs, and fair promotional practices are potential solutions to career immobility.

6.4 Manpower Mobility

The supply of manpower is directly affected by levels of net migration, immigration and occupational movements. By altering the flow of manpower from these sources, some measure of relief can be provided to a manpower disequilibrium. The scope for action in each of these areas is examined below.

Interprovincial Migration

The level of migration between Canadian provinces at any point in time is of relative economic growth rates. Manpower will move in response to actual or perceived earnings differentials between differentials between provinces, and to the level of opportunities. Within the health field however, provincial licencing restrictions enforced by certain professional group impose constraints on interprovincial movements. While there is little scope to restrict interprovincial migration, there is room for indirect manpower planning policy. Relative wage rates between provinces can be changed to some extent to reflect a shortage or surplus situation. Reciprocal licensing requirements will ease the transfer of manpower resources from one province to another, while a tightening of requirements will bring about the opposite result.

International Migration

Immigration policy can be an effective tool to deal with manpower disequilibriums at the national level. Changes in policy can restrict or encourage the inflow of various professionals from foreign countries, and in addition, licensing requirements can reinforce the effect of these changes. There are however, important political ramifications influencing the use of immigration policy to solve domestic manpower problems, particularly with respect to third world and developing countries.

Inter- and Intra- Occupational Mobility

The movement of health manpower from one related occupation to another can be an additional source of supply, that may be effective in reducing surplus in one occupation and alleviating a shortage in another. The first influencing variable, and a measure of the attractiveness of occupational shift, is relative earnings. The slow growth of one sector, and expanding opportunities in a competing one will spur the shifting of labour resources, if proper upgrading programs are available. Changes in licensing requirements are another tool which may promote or discourage the movement of manpower within and between occupations.

7.0 WESTERN HEALTH MANPOWER REQUIREMENTS MODEL

7.1 Introduction

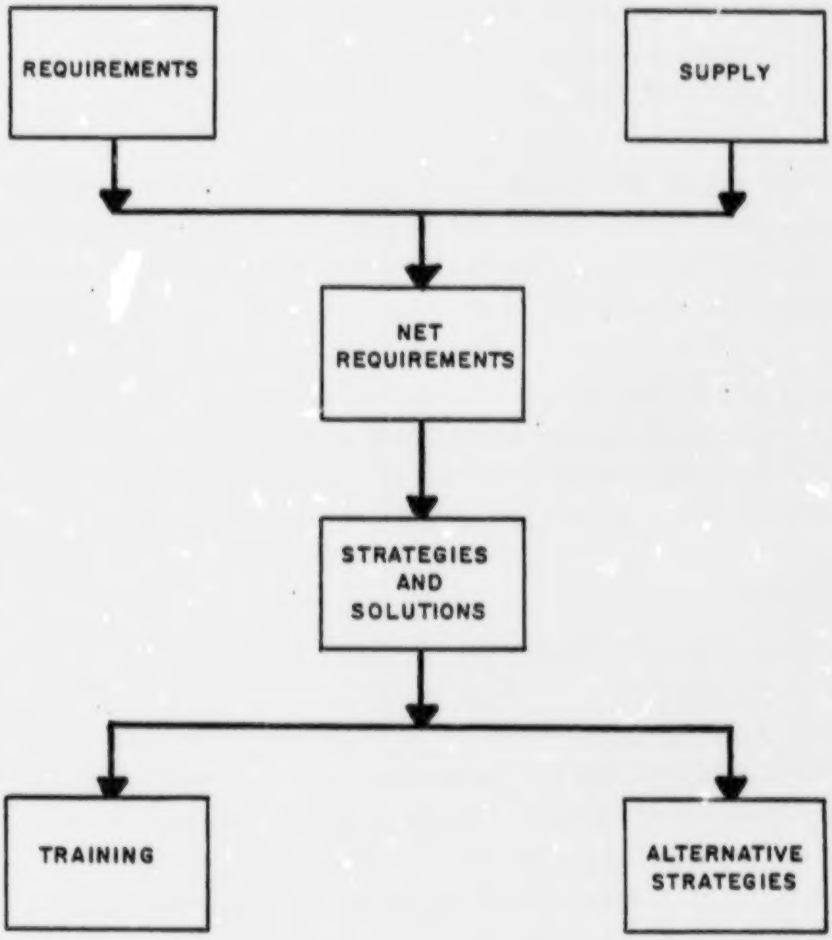
The approach developed in this study to identify net manpower requirements is based on a number of manpower planning techniques and approaches identified through the literature, and discussed above. The required study approach had to be sufficiently flexible to handle different levels of detail in data, supplied from various input sources such as health insurance agencies, associations, and provincial government bodies. In addition, the approach needed the capability to provide a different emphasis, depending on the occupation under review.

The terms of reference for this study are specific, and limit the consultant to an investigation of the supply/requirment relationship for health manpower in Western Canada, and the determination of training responses, if appropriate, to address identified imbalances. The study is not intended to address basic issues related to occupational role and scope of practice.

The study considers health manpower supply and requirements at the provincial and Western Regional level. This is sufficient to determine training requirements. The study terms of reference do not require the examination of manpower distribution within a province. This complex subject remains, however, a major problem for provincial health care planners, and is an area to be examined outside the scope of this study.

EXHIBIT 1.5

MANPOWER PLANNING MODEL



Ideally, health manpower planning is an essential part of planning comprehensive health care strategies. An adequate supply of trained, skilled manpower is essential to ensure an acceptable level of health care. Health Manpower Planning must reflect the role and scope of practice of each occupation, the changing pattern of disease and the health care needs of the changing demographic structure of the province/region. Too often manpower planning in the health community is perceived as an indepedent activity carried out in isolation from health care strategic planning.

The approach to this study, stresses the need for an analysis of service utilization rates, the resolution of issues relating to role and scope of practice, and the definition of health care strategies as they affect manpower requirements.

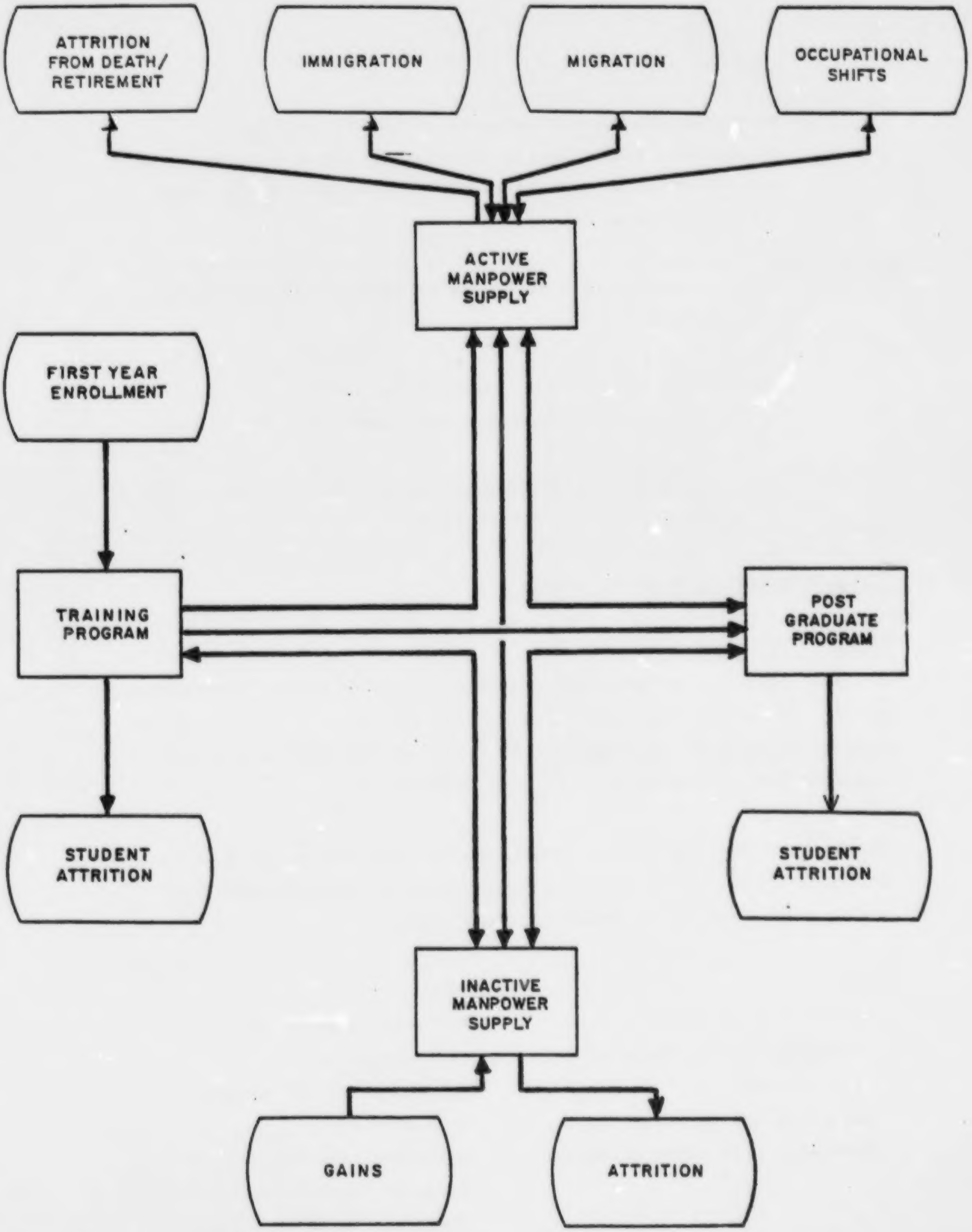
The Western Health Manpower Model has been progorammed in APL. In subsequent phases of the study, this program may be modified to reflect changing characteristics of subsequent occupations. A final summary of the program will be produced at the conclusion of the study.

7.2 Components In The Western Health Manpower Model

Exhibit I.5, opposite, shows the general relationship of the components in the model. These are: manpower supply, manpower reuqirements, net manpower requirements, strategies and solutions to meet net manpower requirements, and training alternatives. Essentially, the approach to determine net manpower requirements consists of five major activities, which includes:

- analysing historical trends in manpower from 1970 to 1980 at the provincial level, including such factors as migration, immigration, and attrition.

EXHIBIT 1.6 INTERACTION OF COMPONENTS IN MANPOWER SUPPLY



Note: Based on G.M.S.S., Health Manpower Research Unit,
University of British Columbia

- surveying the present manpower situation for the occupation, including the existing supply of manpower, the age structure of current practitioners, and the existing training program output.

- forecasting future health care manpower requirements for that occupation.

- identifying net manpower requirements (shortage or surplus) as the difference between manpower supply and requirement.

- examining potential alternative sources of manpower, prior to reviewing training alternatives.

7.3 Determining Manpower Supply

Exhibit 1.6, opposite, shows the interaction of the factors in the manpower supply component of the Western Health Manpower Requirments Model. The schematic flows reflect the system specifications of the General Manpower Stock Simulator developed by the Health Manpower Research Unit, University of British Columbia.

The supply component starts from a base of existing active manpower in the province. This active manpower stock is then increased or depleted by a number of factors. These are:

GAINS

- Output from training
- In-migration and immigration into province
- Return to active workforce
- Movements from other occupations

LOSSES

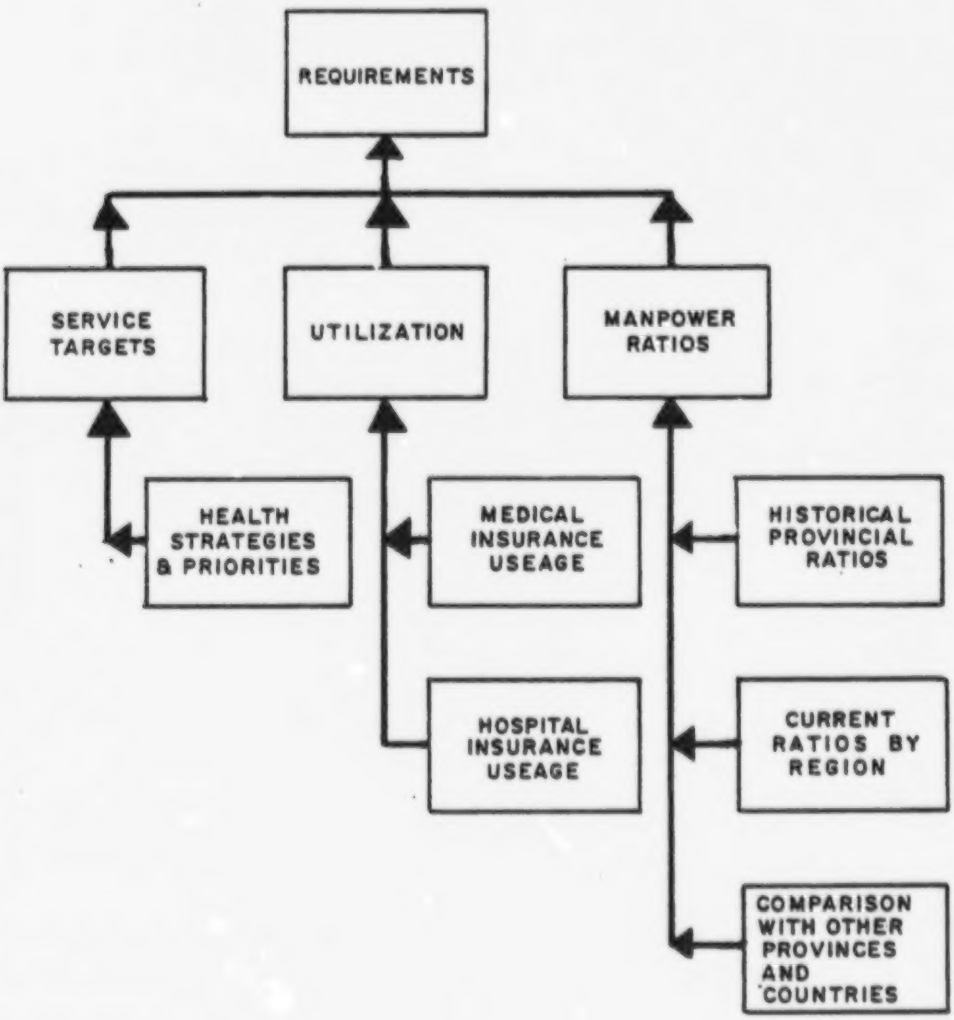
- Attrition from death and retirement
- Out-migration and emigration from province
- Departure from active workforce to inactive workforce
- Movements to other occupations

EXHIBIT 1.7 - PROJECTION OF MANPOWER SUPPLY

1981-2000

YEAR	OPENING STOCK	NET MIGRN	NET IMMIGRN	NET SHIFT	TRAIN OUTPUT	ATTRN	CLOSE STOCK
1981	68	1	1	0	1	12	59
1982	59	1	0	0	1	11	50
1983	50	1	0	0	2	4	49
1984	49	1	1	0	3	5	49
1985	49	1	0	0	2	0	52
1986	52	1	0	0	2	3	52
1987	52	1	1	0	2	2	54
1988	54	1	0	0	2	1	56
1989	56	1	0	0	2	1	58
1990	58	1	1	0	0	2	58 =
1991	58	1	0	0	0	1	58
1992	58	1	0	0	0	1	58
1993	58	1	1	0	0	1	59
1994	59	1	0	0	0	0	60
1995	60	1	0	0	0	0	61
1996	61	1	1	0	0	0	63
1997	63	1	0	0	0	0	64
1998	64	1	0	0	0	0	65
1999	65	1	1	0	0	1	66
2000	66	1	0	0	0	0	67

EXHIBIT 1.8 - DETERMINATION OF MANPOWER REQUIREMENTS


REQUIREMENTS
SERVICE TARGETS
UTILIZATION
MANPOWER RATIOS
HEALTH STRATEGIES & PRIORITIES
MEDICAL INSURANCE USEAGE
HOSPITAL INSURANCE USEAGE
HISTORICAL PROVINCIAL RATIOS
CURRENT RATIOS BY REGION
COMPARISON WITH OTHER PROVINCES AND COUNTRIES

The occupational supply in the model is affected by the values of each of the factors shown above. These values are based on historical manpower trends developed from data supplied by provincial associations, societies and other professional bodies, government agencies and health institutions. In addition, the value of other factors such as projected training output reflect historical trends.

Exhibit 1.7, opposite, shows the projection of manpower supply at the provincial level, over the twenty year period from 1981 to 2000. For each year in the projected period, anticipated levels of net migration, immigration and net occupational shifts are added or subtracted from the opening manpower stock. In addition, training output increases and attrition reduces the expected stock.

7.4 Determining Manpower Requirements

Exhibit 1.8, opposite, shows in diagrammatic format, the three study methods used to determine manpower requirements. The projection of manpower requirements is the most difficult component in the Health Manpower Requirements Model. The traditional approach has been to project a current ratio of practitioners to population onto the future projected population. The population ratio method is limited in value, since it presupposes that the current ratio is appropriate to meet the health care requirements of the existing community. In fact, the existing level of manpower to population may reflect a surplus or a shortage.

The approach used in this study is a combination of planning activities. The study approach is based on three different methods of projecting manpower requirements, and these are discussed in greater detail below.

Service Utilization Rates

The utilization approach is based on an analysis of the pattern of health service usage. It establishes trends in service utilization and projects these onto future population estimates. Service utilization rates are derived from available medical and hospital insurance records, for the time period 1970 to 1980, and may be derived from incidence rates of certain health conditions.

- Step 1, Determine Per Capita Utilization Rate - Wherever possible, historical data on the number of services provided per year is derived by the age and sex of the service recipients. The number of services per age and sex group is then divided by the total population, for the same cohort in the corresponding year. This results in per capita utilization rate by age and sex group.

- Step 2, Project Future Services Required - Based on the analysis of per capita utilization rates, a value for each age-sex group is determined. This rate is then projected onto three population scenarios (low, medium, high) for each time period in the projection period. Total future required services are calcualted by multiplying the per capita utilization rate by the population projections.

- Step 3, Estimate Number of Practitioners Required - Having determined total future services required, the model projects the number of practitioners required to provide this level by assuming a continued level of services per practitioner, as achieved in the base year. The number of services per practitioner is determined by dividing total services, by the number of active practitioners in the base year.

The model divides estimated services required for each population scenario by the anticipated level of services per practitioner. This process is repeated for each age-sex group in the total population, thus resulting in the total number of practitioners required to service total future population. Decimal numbers are rounded up to the nearest full time equivalent practitioner (i.e., 99.2 practitioners = 100).

- Advantages and Limitations - The service utilization approach has two major advantages in projecting manpower requirements. This method reflects historical trends in health service utilization patterns, and also recognizes the changing population age structure in the forecast period. This is important, since usage rates for health services are often directly related to the age structure of the population.

There are also a number of limitations to the service utilization approach. If the number of services provided historically was constrained by a shortage of manpower, the approach will under-estimate the level of utilization that could ultimately be achieved by alleviating the shortage. Furthermore, the approach ignores the potential influence of health education on future utilization of services. In addition, the method does not consider the possible impact of greater accessibility to the practitioner in a geographic or quantitative context. As with other approaches, service utilization projections will be accurate only to the extent that the historical underlying conditions continue to hold into the future.

EXHIBIT 1.9 MANPOWER REQUIREMENTS 1981-2000

BASED ON RATIO OF 1 PRACTITIONER TO 10,000 POPULATION

YEAR	LOW		MEDIUM		HIGH	
	POPLN	REQ NO	POPLN	REQ NO	POPLN	REQ NO
1981	1054.30	105	1061.90	106	1063.20	106
1982	1060.90	106	1068.10	107	1071.80	107
1983	1068.00	107	1074.50	107	1080.70	108
1984	1075.30	108	1081.50	108	1089.60	109
1985	1082.70	108	1088.80	109	1098.40	110
1986	1089.90	109	1096.10	110	1107.20	111
1987	1097.10	110	1103.10	110	1115.60	112
1988	1104.50	110	1110.80	111	1124.50	112
1989	1111.00	111	1117.80	112	1132.80	113
1990	1117.20	112	1124.70	112	1141.10	114
1991	1123.60	112	1131.30	113	1149.30	115
1992	1129.40	113	1137.80	114	1157.20	116
1993	1135.10	114	1143.90	114	1164.90	116
1994	1140.30	114	1149.90	115	1171.90	117
1995	1145.00	114	1155.40	116	1178.80	118
1996	1149.50	115	1160.40	116	1185.60	119
1997	1154.10	115	1165.70	117	1192.00	119
1998	1158.30	116	1170.80	117	1198.60	120
1999	1161.80	116	1175.30	118	1204.90	120
2000	1165.50	117	1180.10	118	1211.00	121

Service Target Ratios

The second method used in this study to determine manpower requirements is based on service target ratios. Service target ratios reflect a theoretical optimal manpower level required to meet health service requirements in the occupation under reivew, and ratios are expressed as the ratio of practitioner to population.

During the study work program, members of the study team met with provincial health authorities, provincial and national associations, and representatives of the health care industry to discuss trends affecting each occupation. In addition, reports, articles and other printed material specific to each occupation were examined in order to identify:

- health care strategies
- population
- defined health care needs
- planned program changes

Each of these issues are considered in the determination of theoretical manpower population ratios. Published ratios derived by various authors are discussed and reviewed to determine the rationale behind the figures.

Once a service target ratio has been chosen, the manpower requirements model calculates projected manpower requirements, by dividing the projected population by the service target ratio. Exhibit 1.9, opposite, shows the table of provincial manpower requirments for the year 1981 to 2000, derived using a service target ratio of one practitioner per 10,000 population.

- Advantages and Limitations - The service target approach represents a theoretical optimal level of manpower. This ideal manpower requirement reflects a planned level of care, as opposed to the manpower requirements based on historical patterns of usage, or the current number of practitioners serving the populaiton. In theory, a service target ratio is based on epidemiological considerations. In practice, the approach is frequently based on the level of care provided in some other region or nation. This begs the question of how appropriate another region's level of care can be if geographical distribution and economic resources are significantly different.

Population Ratio Approach

The third method used in this study to determine manpower requirements is the population ratio approach. A population ratio is derived by dividing the total population at a specified point in time, by the number of active practitioners at the corresponding time point.

The manpower requirements model calculates the population ratio for each year of a historical series. These ratios are analysed to determine if any trend exists, and a ratio level is selected to project future manpower requirements. Usually two projections are made. The first uses the ratio for the last year of historical data, and the second historical ratio which most closely corresponds to the service target ratio, discussed above.

In projecting future manpower requirements, the model divides total projected population in the three scenarios by the previously

EXHIBIT 1.10 - MANPOWER REQUIREMENTS 1981-2000

BASED ON POPULATION RATIO APPROACH

YEAR	NUMBER OF ACTIVE MANPOWER	TOTAL POPULATION	POPULATION TO MANPOWER RATIO
1970	53	981.00	18.5094
1971	57	988.00	17.3333
1972	57	991.50	17.3947
1973	57	997.80	17.5053
1974	57	1010.90	17.7351
1975	61	1018.30	16.6934
1976	64	1021.50	15.9609
1977	65	1029.10	15.8323
1978	63	1032.90	16.3952
1979	69	1046.80	15.1710

EXHIBIT 1.11

PROJECTION OF FUTURE MANPOWER REQUIREMENTS BASED ON POPULATION RATIO

ASSUMED POPULATION PER UNIT MANPOWER: 15.17

YEAR	LOW		MEDIUM		HIGH	
	POPLN	REQ NO	POPLN	REQ NO	POPLN	REQ NO
1981	1054.30	69	1061.90	70	1063.20	70
1982	1060.90	70	1068.10	70	1071.80	71
1983	1068.00	70	1074.50	71	1080.70	71
1984	1075.30	71	1081.50	71	1089.60	72
1985	1082.70	71	1088.80	72	1098.40	72
1986	1089.90	72	1096.10	72	1107.20	73
1987	1097.10	72	1103.10	73	1115.60	74
1988	1104.50	73	1110.80	73	1124.50	74
1989	1111.00	73	1117.80	74	1132.80	75
1990	1117.20	74	1124.70	74	1141.10	75
1991	1123.60	74	1131.30	75	1149.30	76
1992	1129.40	74	1137.80	75	1157.20	76
1993	1135.10	75	1143.90	75	1164.90	77
1994	1140.30	75	1149.90	76	1171.90	77
1995	1145.00	75	1155.40	76	1178.80	78
1996	1149.50	76	1160.40	76	1185.60	78
1997	1154.10	76	1165.70	77	1192.00	79
1998	1158.30	76	1170.80	77	1198.60	79
1999	1161.80	77	1175.30	77	1204.90	79
2000	1165.50	77	1180.10	78	1211.00	80

determined population ratio. The manpower requirement is expressed as full time equivalent practitioners. Exhibits 1.10 and 1.11, opposite, shows the outputs analysing manpower ratios and projecting into future.

- Advantages and Limitations - The population ratio approach is the most basic method of projecting manpower requirements. It is based on historical data, which is usually readily available to planners. The approach is particularly appropriate, if the intended health strategy is to maintain the existing level of manpower into the future. The current manpower population ratio however, ignores problems of geographical distribution, unmet demand or inefficient use of manpower resources if the current stock is not fully productive.

  The underlying assumption of the population ratio approach is that the current ratio or level of active practitioners is appropriate and capable of providing the required level of care to service the population's health care demands. In effect, the population ratio approach tends to project manpower at the current level, and leads to a perpetuation of the status quo which may not be appropriate.

7.5 Calculation of Net Manpower Requirments

The determination of manpower supply, and the projection of manpower requirements are two independent activities. The results of these activities are brought together within the model to calculate net manpower requirements. For any given time point in the forecast period, net manpower requirements are expressed as manpower supply minus manpower requirements.

The net manpower requirements are derived assuming that the underlying conditions of the present situation can be projected onto the future. A sensitivity analysis of these assumptions is undertaken at a later stage. Dependent on the occupation, and the level of detailed data available, one of the three approaches to calculating manpower requirements will represent the most reasonable projection. The other two approaches will provide a range of net requirement projections. It is normally assumed that the medium population projection represents the most reasonable level of net manpower requirement.

After having projected these net manpower requirements for each of British Columbia, Alberta, Saskatchewan and Manitoba, the data is consolidated for the Western Region.

7.6 Assessing Impact of Alternative Strategies and Solutions

Having determined the net manpower requirements under a constant set of assumptions, the study approach requires that the potential impact of changes in productivity, labour mobility and occupational incentives on the net requirement for manpower be examined. These factors are discussed in Section 6, above.

In the evaluation of alternative strategies and solutions, we rely on previously published data, reports and articles. Furthermore, imput is obtained from government groups, national and provincial associations and individual practitioners. We have not conducted any original research into specific aspects of labour mobility, productivity or occupational incentives.

Labour Mobility

In the calculation of manpower supply, projections are made for net migration, net immigration, net inter-occupational movements, and net movement between active and inactive status. These projections are based on historical trends for the period 1970 to 1980. In the review of alternative strategies, the likelihood of changes in the base assumptions for each factor is assessed, based on our appreciation of trends which will affect the number of practitioners.

For example, in reviewing migration and immigration, the net manpower requirements for each occupation in a number of other labour markets are considered, including Ontario, Quebec, the Maritimes, Newfoundland, the United States and the United Kingdom. The possibility of a shortage or surplus in ech of these labour markets will indicate the potential for chaning the assumptions on migration, and immigration, and for re-estimating the net manpower requirements.

Productivity

In those occupations where the service utilization approach has been used to project net manpower requirements, the potential impact of increased productivity is assessed. Productivity is a measure of the output obtained to the resources used. In this study, the measure of productivity is defined as the number of services provided per practitioner. In assessing the potential to increase services per practitioner, three variables are considered. These are, mode of practice, input substitution, and impact of changing technology. In addition to the assessment of each of the three variables outlined above, analysis of the pattern of services per practitioner for the time period under review is completed. The last historical year is used as the basis for projecting into the future. In addition, the Western Health Manpower Requirements Model has been programmed to allow productivity assumptions to be built into the projection of manpower requirements. The services per practitioner are increased at a specified productivity rate for each year in the forecast period, to determine the impact of increased productivity on net manpower requirements.

Occupational Incentives

In the review of alternative manpower strategies and solutions, the impact of changed occupational incentives on manpower supply is evaluated. There are four occupational incentive variables considered. These are, compensation, employment practices, occupational status and career mobility.

Summary - Net Manpower Requirements

The approach used in this study to determine the supply, requirement and net requirement for each occupation is designed to provide basic input into the future training strategies for health occupations in Western Canada. In reviewing alternatives for location and funding of training arrangements, it is essential that the manpower requirments are accurately determined, and that alternatives to training manpower are considered as potential sources of additional practitioners. Conversely, the potential alternative source of manpower will indicate the type of training required. For example, if the return of inactive practitioners to the active labour force is significant, then the indicated training response would be to increase retraining programs.

EXHIBIT 1.12

POPULATION PROJECTIONS

PROVINCE	SCENARIO		
	HIGH	MEDIUM	LOW
BRITISH COLUMBIA	Projection 1[a]	Projection 51	Projection 3[a]
ALBERTA	Series 8[b]	Series 4[b]	Series 3[b]
SASKATCHEWAN	Projection 1[c]	Projection 13[c]	Projection 12[c]
MANITOBA	Projection 2[a]	Projection 1[a]	Projection 4[a]

a. Statistics Canada "POPULATION PROJECTIONS FOR CANADA AND THE PROVINCES 1972 - 2001" No. 91-520

b. Alberta Bureau of Statistics " POPULATION PROJECTIONS ALBERTA, 1977 - 2006 "

c. Saskatchewan Bureau of Statistics

7.7 Population Assumptions

The projection of manpower requirements, under each of the three approaches used in this study, relies on population information for both historical analysis and forecast projections.

In order to use the service targets and population ratio approaches, simple projections of total population would be adequate. Forecasts of manpower requirements based on patterns of service utilization, however, must be based on the age-sex distribution of future population since health service usage is related to the age-sex population profile.

Three population projections were chosen for each province, in order to establish a range of manpower requirements for alternative population growth scenarios. Exhibit 1.12, opposite, shows the selected population projections and the source for each province. The medium population projection represents the most reasonable population growth scenario for each province, and the low and high estimates indicate potential ranges.

8.0 DECISION PROCESS TO EVALUATE TRAINING ALTERNATIVES

In order to translate net manpower requirements into training recommendations a decision process has been developed to be applied to each occupation. There are seven steps in this process:

- Step 1 - Analysis of Manpower Requirements
- Step 2 - Identification of the Appropriate Type(s) of Training
- Step 3 - Definition of Alternative Training Locations
- Step 4 - Evaluation of Alternative Locations for New Programs
- Step 5 - Establish Timing of Training Program Requirments
- Step 6 - Recommended Action(s)/Location(s)
- Step 7 - Recommended Funding Alternatives

This decision process applies to both a net manpower requirement, and to an identified manpower surplus. The process is designed to allow for the logical, consistent evaluation of a range of alternatives.

For a full discussion of this Decision Process, see main report, Section II, Report C.

APPENDIX A - BIBLIOGRAPHY

- Health Manpower Planning Process
- Health Manpower Modelling
- Education

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Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

Section II - Report B

HEALTH MANPOWER
PLANNING, ORGANIZATION AND ACTIVITIES,
WESTERN CANADA

Report B - HEALTH MANPOWER PLANNING,
ORGANIZATION AND ACTIVITIES, WESTERN CANADA

SECTION II - REPORT B

HEALTH MANPOWER PLANNING ORGANIZATION AND ACTIVITIES, WESTERN CANADA

JANUARY, 1981

HEALTH MANPOWER PLANNING ORGANIZATION AND ACTIVITIES - WESTERN CANADA

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APPENDIX A - BIBLIOGRAPHY

EXHIBIT 1

HEALTH MANPOWER PLANNING
ORGANIZATION AND PRACTICES
TERMS OF REFERENCES

EACH PROVINCE

A) Collection of data on supply and requirement for major health manpower groups

B) Information systems on current quotas, enrolment levels and outputs of provincial health manpower training programs.

C) Methods of projecting present and future manpower requirements for major health groups.

D) Methods of projecting supply of major health manpower groups.

E) Methods of identifying future annual requirements for newly trained health personnel.

F) Methods for identifying future needs for upgrading existing health personnel.

WESTERN CANADA REGION

A) Methods for identifying Western Canada's future annual requirements for newly trained health personnel.

B) Methods for identifying Western Canada's future annual requirements for upgrading existing health personnel.

C) Methods for identifying capability of Western Canada producing new, and upgrading existing health personnel.

D) Methods for developing inter-provincial training arrangements.

I.0 INTRODUCTION

As part of this study on the occupations in the initial category of the Western Canada Health Manpower Training Study, the terms of reference require that a review is made of the organization of, and process of health manpower planning at the provincial, and at the Western Canada regional level. In this report we:

- review the terms of reference for this component of the study
- discuss the pattern of health manpower planning process and organization at both the provincial and western regional level
- present recommendations, where appropriate, for improvements in either the organiztion of, or process of health manpower planning.

Terms of Reference

The review of health manpower planning organization and practices is intended to examine:

- the present organizational patterns for health manpower planning and health manpower development at both the provincial and regional level.
- health manpower planning methods and activities in each province, and at the regional level.

Exhibit 1, opposite, shows the specific topics to be addressed in each area.

2. PATTERNS OF HEALTH MANPOWER PLANNING ORGANIZATION AND ACTIVITIES PROVINCE AND WESTERN REGION

2.0 INTRODUCTION

In this section of the report, we review the organization and manpower planning process for each province in Western Canada, and for the Western Region.

2.1 GENERAL COMMENTS

Within the four Western Provincial Governments, there are different organizational patterns of responsibility for manpower planning, which reflect variations in government structure. There are also different manpower planning approaches and techniques used. Certain general themes have emerged as a result of the study, and these are commented on below.

1) Manpower Statistics - In each of the four provinces reviewed, there is now a basic data base of current manpower complements, by occupation.

2) Review of Specific Problem Occupations - In general, detailed manpower planning and analysis has reviewed either specific occupations, or groups of occupations which form immediate problems (i.e., Nursing, Physician). This project by project approach tends to examine immediate responses such as additional training, and ongoing problems, (i.e., manpower distribution).

3) Use of Health Insurance Data - The various provincial health insurance data banks contain essential planning information on service utilization. Often this information is either inaccessible, or in a format which is of limited use to manpower planners.

4) Relationship of Health Manpower Planning and Strategic Health Care Planning - Health Manpower Planning is an integral part of planning health care strategies. In general, there has been a tendency to separate health manpower planning activities in Western Canada from strategic health care planning. Often the effectiveness of health manpower planning in Western Canada has been limited by inadequate health care planning, and undefined health care strategies. As a result, manpower planning has generally tended to use basic approaches such as the current population ratio to determine future manpower requirements. The approach tends to perpetuate the existing status quo. The use of periodic vacancy surveys also tends to identify immediate manpower requirements which require short-term responses.

There is a need to develop a closer relationship between health care strategic planning groups and health manpower planning groups to ensure that longer term manpower requirements are identified to form the basis for long-term health manpower strategies.

General Recommendations

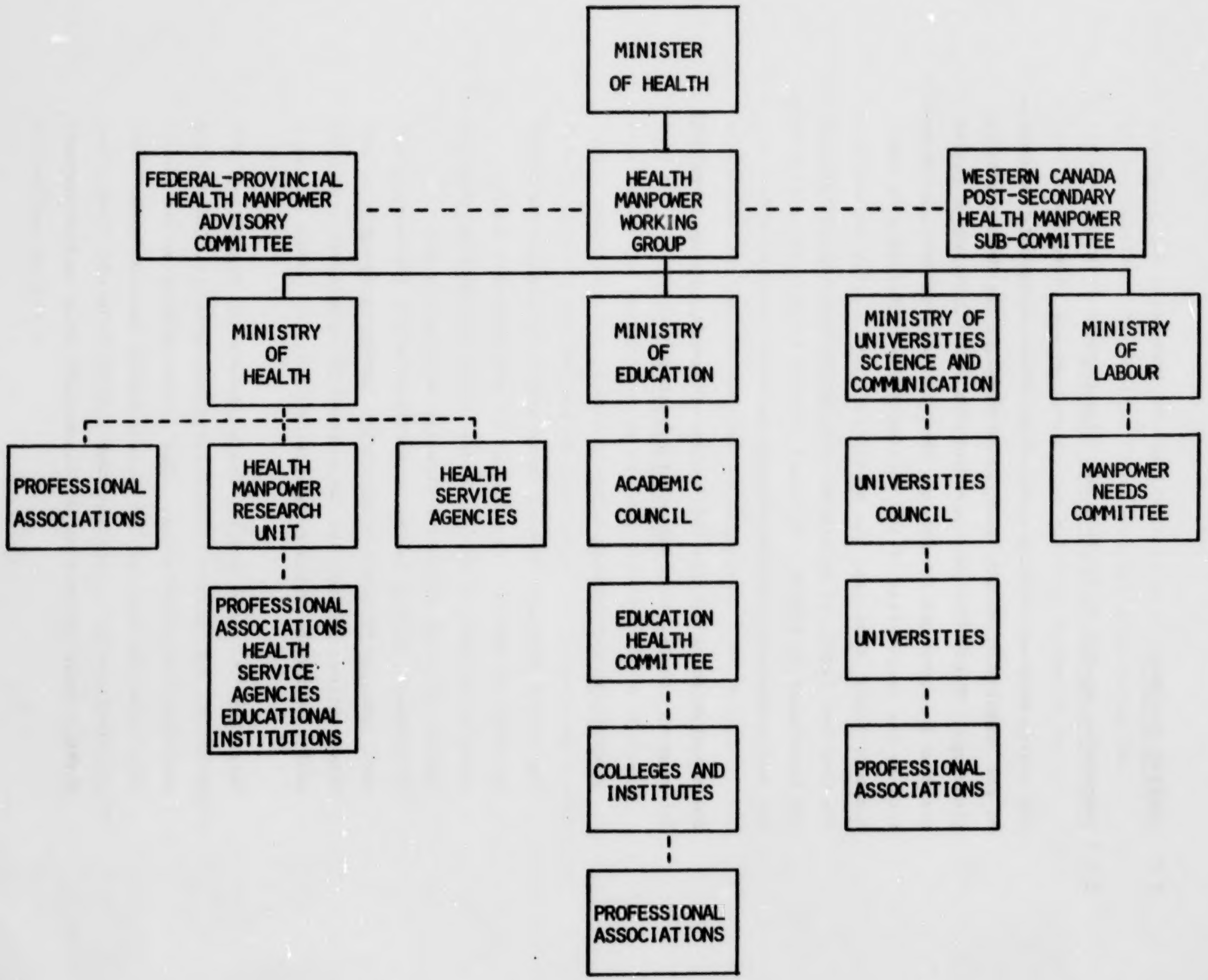
- that there be greater emphasis on manpower planning as a component in health care planning systems.

- that there be a greater emphasis on the definition of long-term health care strategies and the related manpower needs.

- that the organizational placement of manpower planning activities be at a senior level with responsibility for health care policy decisions.

EXHIBIT 1

ORGANIZATION OF HEALTH MANPOWER PLANNING IN B.C.


MINISTER OF HEALTH
HEALTH MANPOWER WORKING GROUP
FEDERAL-PROVINCIAL HEALTH MANPOWER ADVISORY COMMITTEE
WESTERN CANADA POST-SECONDARY HEALTH MANPOWER SUB-COMMITTEE
MINISTRY OF HEALTH
MINISTRY OF EDUCATION
MINISTRY OF UNIVERSITIES SCIENCE AND COMMUNICATION
MINISTRY OF LABOUR
PROFESSIONAL ASSOCIATIONS
HEALTH MANPOWER RESEARCH UNIT
HEALTH SERVICE AGENCIES
ACADEMIC COUNCIL
UNIVERSITIES COUNCIL
MANPOWER NEEDS COMMITTEE
PROFESSIONAL ASSOCIATIONS HEALTH SERVICE AGENCIES EDUCATIONAL INSTITUTIONS
EDUCATION HEALTH COMMITTEE
UNIVERSITIES
COLLEGES AND INSTITUTES
PROFESSIONAL ASSOCIATIONS
PROFESSIONAL ASSOCIATIONS

2.2 BRITISH COLUMBIA

2.2.1 Responsibility For Health Manpower Planning

The Health Manpower Working group is an intra-ministerial committee of the Ministry of Health which is responsible for health manpower planning. The Health Manpower Research Unit, Division of Health Services Research and Development at University of British Columbia, acts as the secretariat of the working group. Liaison with the Manpower Needs Committee, the provincial coordinating mechanism in the manpower field, is maintained through the representative from the Department of Labour. Informal liaison is also maintained with the Health Education Advisory Committee.

The organizational pattern for health manpower planning in British Columbia is displayed in Exhibit 1,opposite.

1. Health Manpower Working Group

The Health Manpower Working Group which reports to the Deputy Minister of Health, is composed of the assistant deputy minister of each of the divisions within the Ministry of Health, with the Executive Director of Planning and Development, acting as chairman. There is one representative each from the Ministry of Education and Ministry of Universities, Science and Communications, and up to two members from the Ministry of Labour.

The Health Manpower Working Group advises the Ministries of Education and Universities, Science and Communications on the needs for health personnel. The group coordinates the collection and analysis of data on health manpower and coordinates appropriate manpower studies. In addition, the Working Group reviews policy issues affecting health manpower, including the assessment of the implications of proposed changes in legislation. The Working Group provides a mechanism for inter-ministeral communication and liaison on matters related to health manpower, and represents the Ministry of Health on federal/provincial, interprovincial and intra-provincial committees concerning health manpower. The Working Group assesses the manpower implications of proposed health care programs, and reviews proposals for the establishment of new types of health care workers.

2. Health Manpower Research Unit

The Health Manpower Research Unit coordinates the research efforts of the Health Manpower Working Group. The Health Manpower Research Group is responsible for a number of functions including the maintenance of the cooperative health manpower data base, the preparation of various reports on the status of health manpower, the conduct of vacancy surveys, and the development and maintenance of the system for forecasting health manpower supply.

3. Ministry of Health

The role of the Ministry of Health is to identify the need for health manpower personnel and to advise the Ministeries of Education and Universities, Science and Communications on the size and number of programs and distribution of graduates.

The Ministry of Health has set up special task forces to deal with specific health manpower issues. For example, the Advisory Committee on Medical Manpower was established to examine the problems associated with the distribution of physicians in British Columbia, while the Vision Care Task Force investigated the respective roles of ophthalmologists, optometrists and dispensing opticians.

4. Ministry of Education

The Ministry of Education is represented on the Health Manpower Working Group by the Coordinator of Health and Social Services Programs. The Coordinator reports to the Director of the Program Services Division, Post-Secondary Education, who is responsible for program coordinations and review, program research, and curriculum development at colleges and specialized institutes.

The role of the coordinator of health and social service program is to review and coordinate health and social service programs at the colleges and institutes. This includes review of proposals for new programs at colleges and institutes, interprovincial liaison concerning the education of health manpower and the negotiation of bi-lateral training agreements concering health manpower.

5. Academic Council

The Academic Council, a lay body established under the Colleges and Institutes Act, advises the Minister of Education on the management of academic transfer programs, including all health and human service programs at colleges and institutes. It reviews annual budget submissions from the colleges and institutes, submits an annual budget request to the minister, and then allocates the approved funds to individual institutions.

The Academic Council established the Education Health Advisory Committee to assist in the planning of health education in the province. The committee is composed of educators and professionals in various health disciplines. Liaison is maintained with the Health Manpower Working Group as the Executive Director of Planning and Development within the

Ministry of Health sits on the Education Health Advisory Committee.

The objective of the Education Health Advisory Committee is to develop effective training programs and facilities for health manpower.

6. Ministry of Universities, Science and Communication

The mandate of the Ministry of Universities, Science and Communications is to encourage and facilitate the development of university instruction and research in British Columbia. The Ministry is represented on the Health Manpower Working Group. The role of the Ministry and the Universities Council are interrelated, but not specifically defined. The Ministry assists the Council in evaluating programs, facilities, and annual and five year plans, as well as coordinating student aid.

7. Universities Council

The Universities Council, a lay body established under the Universities Act, is an intermediary body between the three universities and the provincial government. The Council reports to the Minister of Universities, Science and Communication. The Universities Council is responsible for the funding and approval of programs. All new degrees and faculties must be approved by the Council. The Council reviews annual operating budgets and five year plans and advises the Minister of Universities, Science and Communications on funding priorities. Each year, funds for existing programs are distributed to the universities on a formula basis.

There is a separate funding mechanism for new programs. While there are no health committees to the Council, the Council may seek advice from the Educational Health Advisory Committe when dealing with health programs at the three universities.

8. Ministry of Labour

The Ministry of Labour has provincial responsibility for employment and apprenticeship training policies. The role of the Manpower Division is manpower planning, occupational forecasting, liaison with the federal government on immigration, and consultation wtih provincial ministries, industry, and other agencies on manpower issues.

9. Educational Institutions

As the colleges, institutes, and universities are managed by autonomous boards of governors, each institution is responsible for its own educational planning. The educational institutions cooperate with the Ministry of Education in producing the inventory of health care and human service programs and with the Health Manpower Research Unit in the preparation of the status reports on the production of health and human service personnel.

10. Professional Associations

Professional associations cooperate with the Health Manpower Research Unit in setting up the health manpower data bank. Their membership are also represented on ministerial task forces such as the Medical Advisory Committee, the Vision Care Task Force or the Long Term Care Task Force. As well, Association members also serve on steering committees for Health Manpower Research Unit studies, program advisory committees at educational institutions, and Education Health Advisory Committee of the Academic Council.

The British Columbia Health Association, an association of Hospitals, auxiliaries, and nursing homes in the province, recently established a Manpower Committee to ensure that employers are involved in the definition of manpower needs in the health care industry.

Currently, the Association has established a number of ad hoc committees to study particular manpower issues.

2.2.2 Health Manpower Planning Methods and Activities

In this section, we describe the manpower planning methods and activities of the Health Manpower Working Group. Methods and activities related to supply, requirements, and the development of strategies and solutions to meet net requirements are discussed separately.

Health Manpower Supply

The Health Manpower Research Unit maintains a health manpower data base, collects statistics on the production of health personnel and forecasts manpower stock. The data bases are developed in cooperation with professional associations and licensing bodies. The information is collected through official licensing questionnaires and rosters. The data base, which presently includes 28 occupational groups, is of three types:

- computer based and updated by the research unit.
- computer based and updated by another group.
- membership lists collected by the research unit and supplemented by periodic questionnaires.

While the manual data bases often only have data on name and place of practice from the membership lists, the computerized data bases have information on personal characteristics, professional qualifications, and employment. The research unit also have tapes of the practitioner profile summary from the Medical Services Plan.

Every second year the Health Manpower Research Unit produces a Roll-Call Report using the health manpower data bank.

The research unit also conducts a bi-annual survey to determine the number of health and human service personnel being produced. A questionnaire is sent to each program director at colleges, institutes, universities and hospitals with intern or resident programs. An additional questionnaire is sent to college principals and university presidents on proposed programs. Through the questionnaire information is collected on current and projected number of entrants into and graduates from health and human services training programs. The survey results and the analysis are published in the Production Reports. Data is provided by institution and by program. Information provided on health programs include program description, manpower trained, length of course, entry requirements, external registration, certification, or licensing as well as five year projections on entrants and graduates.

The Ministry of Education also puts together a similar document, titled Educational Programs in Colleges and Provincial Institutes in British Columbia which is a classification of Health and Human Service Programs. This inventory of health and human service rogram and proposed programs by institution is based on information from calendars and contact with administrators and faculty.

The Health Manpower Research Unit has developed the general manpower stock simulator model (GMSS) for projecting health manpower supply and for analyzing the effect of policy options on the stock and distribution of manpower. GMSS is a computer model which is used to simulate the factors affecting a stock.

The model has been used to project the stock of physicians and dentists using the computerized health manpower data base and to investigate the effect of policy options such as limiting immigration, or opening or expanding training programs.

Requirements for Health Manpower

The Health Manpower Research Unit estimates requirements for health manpower using various methods including, manpower ratios, survey of difficult to fill positions, special institutional surveys, utilization of medical services, follow-up surveys of graduates.

Manpower ratios are used as an estimate of health manpower requirements. Intra-provincial comparisons of the manpower ratio and changes in the ratio are made by hospital district, community, metropolitan/and non-metropolitan. Manpower ratios were also compared with ratios in other provinces.

The Difficult To Fill Vacancy Survey conducted in cooperation with the British Columbia Health Association commenced in January 1979. A difficult to fill position is defined as those positions for which active recruitment has occurred for 30 days without signing a suitable applicant. A mail questionnaire is sent to all hospitals, selected government institutions, and major voluntary associations. The respondent is asked to update the form weekly and to forward the results monthly. Information is requested on full and part-time vacancies including position descriptions, reason for vacancy, qualifications required and date position became vacant.

The research unit tabulates the vacancies and duration of vacancy for positions by hospital areas and size of hospitals. The survey is used an an indication of recurring problems and fluctuations in health manpower requirements. In the future, the coverage may be extended to long term care facilities, community health services, and private offices. The Health Manpower Research Unit, conducts special surveys of health agencies to determine current and future manpower requirements for particular occupations.

The British Columbia Cooperative Health Manpower Planning Data Base includes utilization statistics from the Medical Services Plan, hospitals use tapes, day-surgery hospital tapes, and returns from hospitals and community care facilities.

For some research projects, the Health Manpower Research Unit has conducted follow-up surveys of recent graduates. The ability of recent graduates to find jobs in their field is an indication of the manpower requirements.

Strategies and Solutions

Various policy alternatives are assessed by the Health Manpower Research Unit. The GMSS model has been used to assess the impact of policy scenarios on the net requirements for physicians, nurses, medical laboratory technologists. Effects of immigration policy, and the setting up or expansion of training programs have been analyzed.

For other occupations where an extensive data base does not exist, strategies and solutions are developed and assessed on a project by project basis. The Research Unit considers the implications of such strategies as training programs, immigration policy, the use of auxilliaries and legislation to match manpower stock and requirements. The emphasis has been on the setting up or expansion of existing training programs to meet additional manpower requirements. For some health groups, refresher courses have been put on to upgrade or re-qualify personnel.

2.2.3 Findings

The interaction of various manpower planning groups at the government and association level is relatively complex. The involvement of lay councils in the allocation of funds results in a complicated process of training program approval and establishment of enrolment quotas. The basic manpower planning processes are adequately developed, although there is a need to develop a model of manpower requirements to supplement the supply model (GMSS).

2.2.4 RECOMMENDATIONS

- That the Health Manpower Research Unit continue to coordinate and control all research into health manpower and review the terms of reference for all research projects in health manpower.

- That the role, definition, responsibility and terms of reference of each of the parties involved in the manpower planning process for health occupations be reviewed by the Minister of Health.

- That a review be undertaken of the complex process for training program approval by the various councils which control funding and the ministries which control program development.

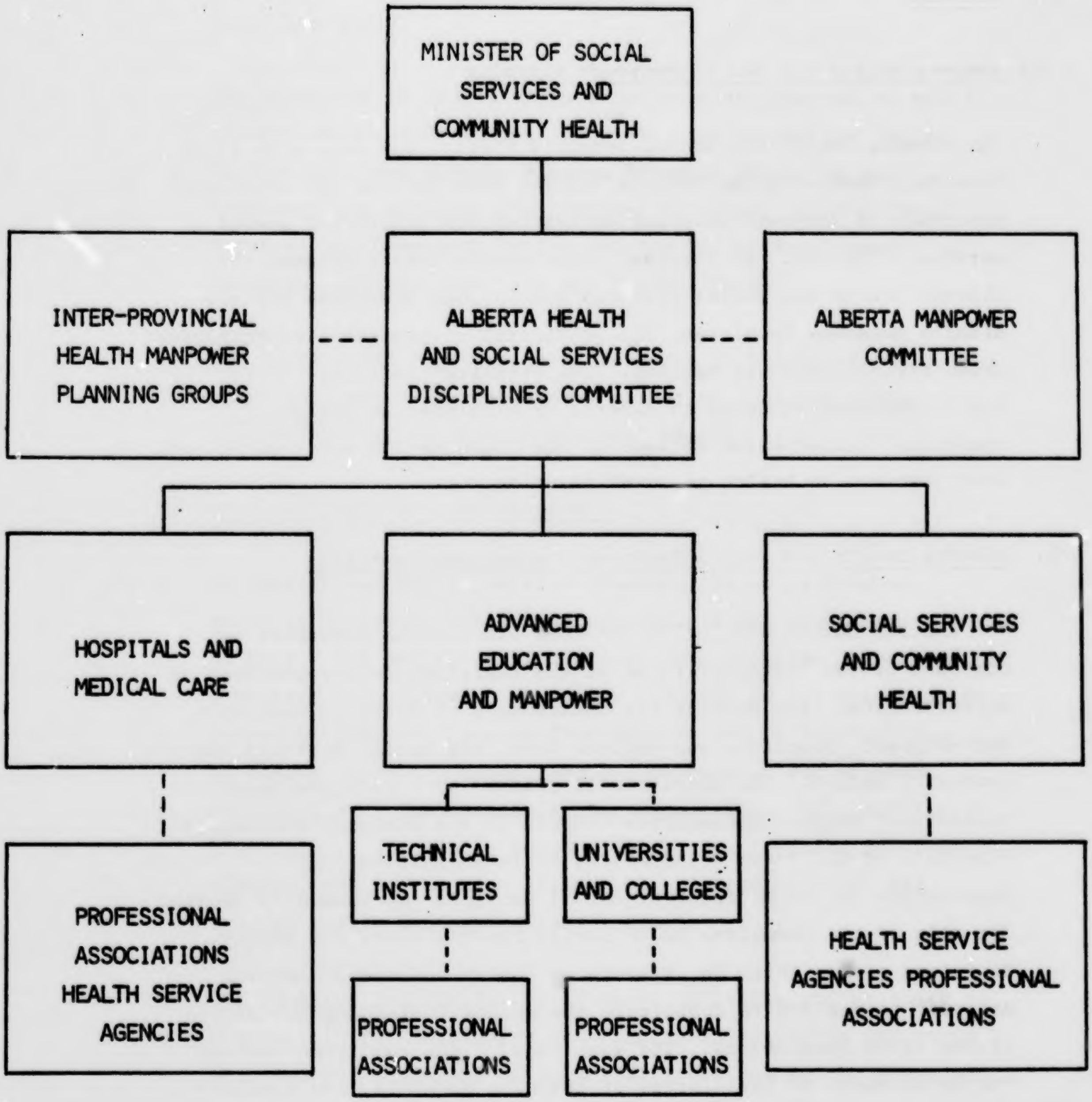
- That the Ministry of Education and the Ministry of Universities, Science and Communications be given greater control of the level of enrolment to allow for increases or reductions in the number of students entering specific training programs, in order to more effectively meet health manpower requirements.

- That a model be developed for manpower requirements to supplement the supply model (GMSS).

- That consideration be given to a regular follow-up survey of graduates.

EXHIBIT 2

ORGANIZATION OF HEALTH MANPOWER PLANNING IN ALBERTA


MINISTER OF SOCIAL SERVICES AND COMMUNITY HEALTH
INTER-PROVINCIAL HEALTH MANPOWER PLANNING GROUPS
ALBERTA HEALTH AND SOCIAL SERVICES DISCIPLINES COMMITTEE
ALBERTA MANPOWER COMMITTEE
HOSPITALS AND MEDICAL CARE
ADVANCED EDUCATION AND MANPOWER
SOCIAL SERVICES AND COMMUNITY HEALTH
PROFESSIONAL ASSOCIATIONS HEALTH SERVICE AGENCIES
TECHNICAL INSTITUTES
UNIVERSITIES AND COLLEGES
PROFESSIONAL ASSOCIATIONS
PROFESSIONAL ASSOCIATIONS
HEALTH SERVICE AGENCIES PROFESSIONAL ASSOCIATIONS

2.3 ALBERTA

2.3.1 Responsibility for Health Manpower Planning

The Alberta Health and Social Services Disciplines Committee is an interdepartmental group responsible for coordinating the provincial government's manpower planning activities for health and social service personnel. An informal relationship exists between the Alberta Health and Social Services Disciplines Committee and the Alberta Manpower Committee, the provincial government's coordinating group for all manpower matters. The organizational pattern for health manpower planning in Alberta is displayed in Exhibit 2, opposite. A discussion follows of the organization and role of each body involved in health manpower planning.

1. Alberta Health and Social Services Disciplines Committee

The Alberta Health and Social Services Disciplines Committee is composed of two representatives at the assistant deputy minister or director level from each of the Departments of Advanced Education and Manpower, Hospitals and Medical Care, and Social Services and Community Health. The Committee is chaired by a non-government appointee. While the committee reports to the Minister and Deputy Ministers of all three Departments, it is administratively responsible to the Minister of Social Services and Community Health. The role of the Committee is to advise the Ministers and Deputy Ministers of the three Departments on health and social service manpower issues and to coordinate the manpower planning activities of the three Departments. The functions of the committee include the development of inventories of training programs, and manpower levels, the review of data and information on health manpower and training from other jurisdictions, the review of manpower and training requirements and the identification of particular problem areas, the development of recommended actions to resolve these problems and the identification of specific health manpower areas for study.

The Committee is supported by a Secretariat composed of staff members from the following agencies: the Health and Social Service Programs Branch, Alberta Advanced Education and Manpower; the Research and Planning Division, Alberta Social Services and Community Health and the Policy Development Division, Alberta Hospitals and Medical Care.

The Secretariat conducts basic research on behalf of the committee, and prepares reports either on specific subjects or occupations, or on general manpower levels.

2. Advanced Education and Manpower

The Health and Social Service Programs Branch of Program Services Division directs and coordinates the development of health and social service educational programs throughout the post-secondary system. The major function of the branch is to review program initiatives from post-secondary institutions according to policy guidelines and procedures for program coordination. The branch is also responsible for compiling an inventory of all health and social service training programs in Alberta, and serves as a liaison with interprovincial and federal health manpower planning groups.

The Planning Secretariat of Advanced Education and Manpower is responsible for developing information to assist in long-term planning and recommending policy alternatives in the areas of post-secondary education, manpower and demography.

Except for the technical institutions and Vocational Centres, which are administered directly by Advanced Education and Manpower, the post-secondary institutions are governed by autonomous boards. However, the Department does have some control over board-governed institutions within their responsibility through funding and program approval procedures for new programs or substantive changes in existing programs. All institutions wishing to offer a new program, or to revise an existing one, must submit a letter of intent to the Program Services Division for their review and approval.

The Department does not directly approve or otherwise control the size of quotas in board governed institutions. In all instances, the institutions set the quotas based upon a variety of institutional and community needs, but there is consultation between government and the institutions when there is evidence that quotas should be changed. When new programs are approved, the size of student enrolment is assessed but the government does not take a position of specifying exactly what the student intake has to be.

3. Social Services and Community Health

The Director of Manpower Planning, Research and Planning Division, Alberta Social Services and Community Health acts as Secretary to the Alberta Health and Social Services Discipline Committee.

The Department of Social Services and Community Health has responsibility for community health, mental health, rehabilitation, and social services.

The Department's Research and Planning Division is the focus of the provincial government's health manpower planning activities and it supports the other provincial government departments in these manpower planning activities. Activities in the Department on behalf of the Alberta Health and Social Services Disciplines Committee include the preparation of an annual inventory of health and social service manpower in Alberta, semi-annual employment surveys to monitor the supply and demand situations for health and social service personnel, preparation of reports concerning various health and social service manpower groups or other manpower planning issues, and review of legislation for health and social service personnel.

Hospitals and Medical Care

The Department of Hospitals and Medical Care is responsible for the active treatment hospitals, auxiliary hospitals, and nursing homes, as well as Alberta's health care insurance programs.

The Department is responsible for the maintenance of the Alberta Physician Data Bank and the preparation of reports concerning various health manpower groups.

The Department is also involved in the analysis of utilization statistics from the Alberta Health Care Insurance Plan, maintaining practitioner data files for the Alberta Health Care Insurance Plan, consulting services to institutions, including the supply, utilization and qualifications of health manpower, and the funding of graduate medical education in hospitals.

Alberta Manpower Committee

The chief deputy minister or deputy minster level from the Departments of Agriculture, Tourism and Small Business, Economic Development, Energy and Natural Resources, Labour, Social Services and Community Health, Transportation, and Federal and Inter-governmental Affairs make up the membership of the Alberta Manpower Committee. The committee is chaired by the Deputy

Minister of Advanced Education and Manpower. The prime role of the committee is the provincial coordination and federal liaison in the manpower field. Major coordinating groups deal with specialized and specific manpower concerns. The permanent secretary to the committee, a position established within the Manpower Services Division of Advanced Education and Manpower, sits on the Alberta Health and Social Service Disciplines Committee, providing an informal link between the two committees.

6. Educational Institutions

Except for the technical institutes and Vocational Centres, which are operated directly by Advanced Education and Manpower, the post-secondary institutions are governed by autonomous boards. The educational institutions initiate proposals for new and expanded health and social service programs. In developing new proposals, educational institutions seek assistance from the professional associations and local employers in determining need and curriculum.

Proposals are received from the institution by Advanced Education and Manpower. The department controls the development of new and expanded programs through to the program approval and funding process.

7. Health Service Agencies

The Alberta Hospital Association (A.H.A.) represents the province's active treatment hospitals, auxiliary hospitals, and nursing homes. The Association conducts semi-annual employment surveys.

Individual members of the A.H.A. also provide input to the health manpower planning process through their representation on advisory committees to various health manpower training programs at post-secondary educational institutions.

8. Professional Associations

Professional associations have an impact on the health manpower planning process. Associations are also represented on advisory committees to health manpower training programs at post-secondary educational institutions. In addition, the professional associations provide assistance to the Alberta Health and Social Services Disciplines Committee in its manpower data collection activities.

2.3.2 Manpower Planning Methods and Activities

In this section, we discuss the methods used by the Alberta Health and Social Services Disciplines Committee in determining and projecting health manpower supply, requirements, and training needs.

Health Manpower Supply

Data are collected on health and social service manpower and training programs. Since 1978, the Research and Planning Division of the Department Social Services and Community Health has put together an annual health and social service manpower inventory. Presently, data are available on 28 health and social service manpower groups.

The Department of Hospitals and Medical Care maintains the Alberta Physician Data Bank, which contains information on all physicians currently practising in the province. The College of Physicians and Surgeons of Alberta is the source of information for the data bank.

The Department also maintains the Health Care Insurance Practitioner File, which contains information on "fee-for-service" physicians receiving payments from the Alberta Health Care Insurance Plan.

Program Services, Advanced Education and Manpower, maintains a registry of health and social service programs. The information on training programs is published in Alberta Health and Social Service Training Program Inventory.

The training and manpower inventories are used by government departments, educational institutions, health and social service agencies and professional associations for planning purposes.

The Alberta Health and Social Services Disciplines Committee has concentrated its efforts in collecting baseline data on health manpower groups. However, the committee has recently commissioned the Planning Secretariat of Advanced Education and Manpower, to develop a general health manpower model. One component of this model will forecast manpower supply using attrition rates, new registrations, and active/inactive flows. A mail survey will be used to collect the data from associations.

2. Health Manpower Requirements

Employment surveys and manpower ratios are used to estimate current health manpower requirements. The health manpower model currently being developed by the Planning Secretariat for the Alberta Health and Social Services Disciplines Committee will be used to forecast manpower requirements.

The employment survey is used to monitor current demands by providing employers and the provincial government with an early warning system of manpower shortages or problems in distribution.

Manpower ratios are also used as an indication of shortages and surpluses. In the health and social service manpower inventory, the Manpower Planning Branch provides data on current and historical manpower ratios by region for each occupational group. Changes in the ratio over time and comparisons between regions and with other provinces, are used as measures of relative shortages or surpluses.

Advanced Education and Manpower is investigating the use of follow-up surveys of graduates to determine whether graduates are finding employment. The survey would be for the Alberta Social Services Disciplines Committee, and would provide additional data to the employer surveys, and manpower ratios on current manpower requirements.

3. Strategies and Solutions

As the general manpower model is not operational, the Alberta Health and Social Services Disciplines Committee has to rely on the employer surveys or the manpower ratios for estimates of current requirements. The committee prepares status reports to advise the respective ministers on appropriate strategies for meeting health and social service manpower needs. Status reports are prepared to advise the ministers on both general and specific occupational issues. General issues addressed by status include: legislation, immigration/emigration, migration, continuing education, and financial assistance to students. Occupational status reports are presented in a standard format including definition, numbers, and distribution, demand, training, program legislation, and prior government reports.

Program Services, Advanced Education and Manpower, coordinates the implementation of training recommendations through program approval and funding mechanism or through interprovincial training agreements.

2.3.3 Findings

The current membership of the Alberta Health and Social Services Disciplines Committee is not representative of the major users of health manpower. The rudimentary procedures for manpower planning are developed. There is, however, a serious deficiency in the lack of a forecasting model for estimating manpower needs. There is also a deficiency in the current manpower supply information that is collected (for example, age distribution, migration, registration, etc.).

2.3.4 RECOMMENDATIONS

- That a health manpower planning unit be established in Research and Strategic Planning Branch of the Policy Division, Hospitals and Medical Care, and be adequately staffed to provide a manpower planning capability in this department.

- That the membership of the Health and Social Services Disciplines Committee should be expanded to include representatives from the Hospitals Services Division of the Department of Hospitals and Medical Care; it should also include representatives from the Mental Health Services Division, the Rehabilitation Services Division, and the Research and Planning Division of the Department of Social Services and Community Health.

- That more input be solicited from professional associations and employee groups and that task forces including members from these associations and employee groups be used to review specific manpower subjects.

- That the Alberta Health and Social Services Disciplines Committee Secretariat coordinate and control all provincial government research into health manpower issues and review the terms of reference for provincial government research projects into health manpower.

- That Advanced Education and Manpower have greater control of the level of enrolment to allow for increase or reduction in the number of students entering specific training programs, in order to more effectively meet health manpower requirements.

- That a model be developed for long-range health manpower forecasting.

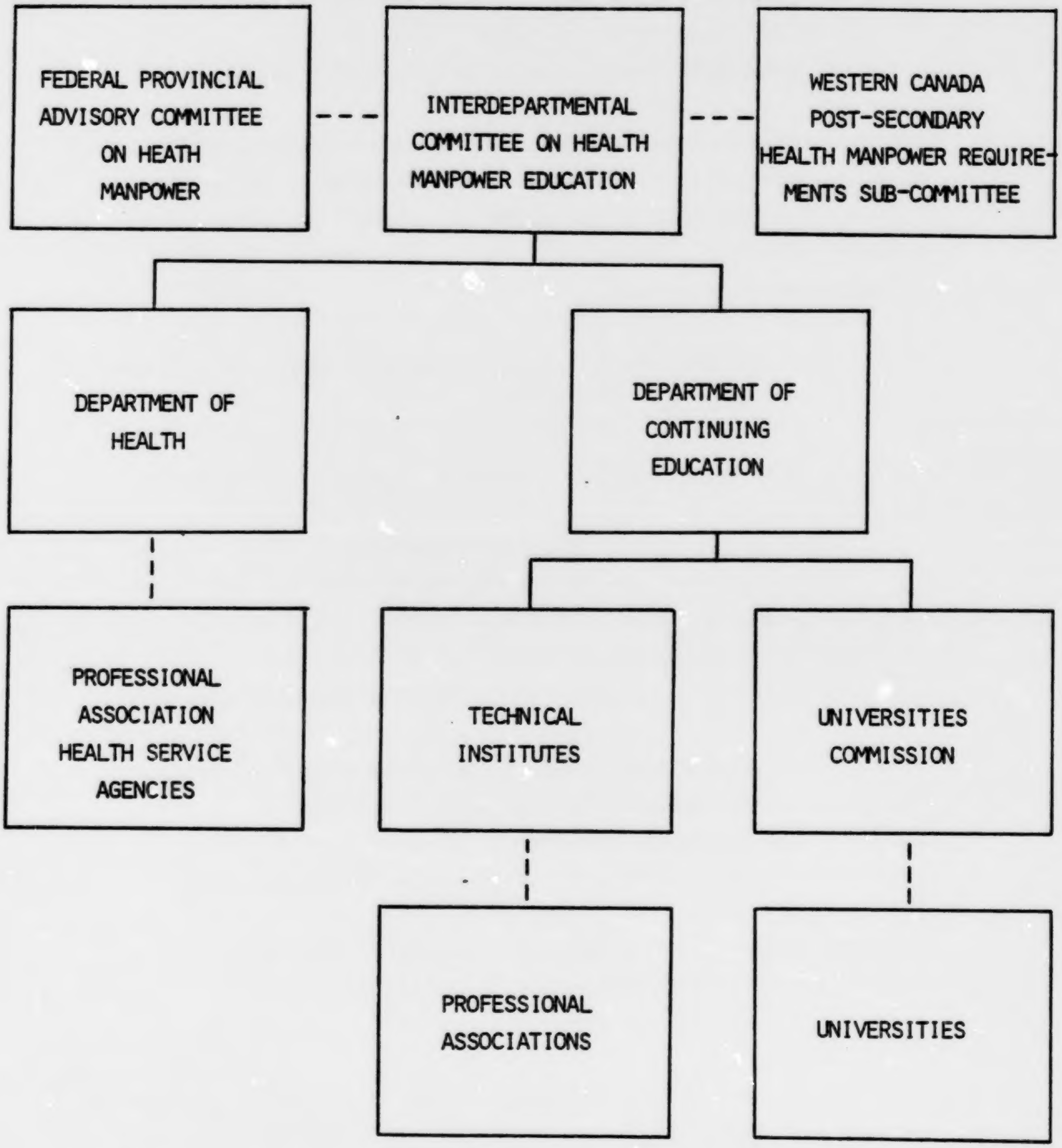
- That regular graduate follow-up surveys be implemented.

- That the Medical Insurance Commission Data Base System be used more extensively for service utilization analysis.

- That the coverage of the employer's survey be expanded.

- That basic data on current manpower levels be expanded to include data from the associations on registrations, and consideration be given to developing a cooperative data base maintained by government and associations.

EXHIBIT 3 - ORGANIZATION OF HEALTH MANPOWER PLANNING IN SASKATCHEWAN


FEDERAL PROVINCIAL ADVISORY COMMITTEE ON HEATH MANPOWER
INTERDEPARTMENTAL COMMITTEE ON HEALTH MANPOWER EDUCATION
WESTERN CANADA POST-SECONDARY HEALTH MANPOWER REQUIREMENTS SUB-COMMITTEE
DEPARTMENT OF HEALTH
DEPARTMENT OF CONTINUING EDUCATION
PROFESSIONAL ASSOCIATION HEALTH SERVICE AGENCIES
TECHNICAL INSTITUTES
UNIVERSITIES COMMISSION
PROFESSIONAL ASSOCIATIONS
UNIVERSITIES

N.B. THE HEALTH SERVICES BRANCH, DEPARTMENT OF NORTHERN SASKATCHEWAN HAS RESPONSIBILITY FOR HEALTH MANPOWER AS WELL.

2.4 SASKATCHEWAN

2.4.1 Responsibility For Health Manpower Planning

The Interdepartmental Committee on Health Manpower Education is the formal mechanism for health manpower planning in Saskatchewan. Within the Department of Northern Saskatchewan, the Health Services Branch has responsibility for health manpower in the Northern part of the province. The organizational pattern for health manpower planning is displayed in Exhibit 3, opposite.

1. Interdepartmental Committee On Health Manpower Education

The Interdepartmental Committee on Health Manpower Education, is composed of senior officials of the Departments of Continuing Education and Health. Health is represented by the deputy minister, the executive director of the Hospital Services Plan, and an associate deputy minister and a research officer of Policy, Research and Management Services. The deputy and associate deputy minister, the director of the policy planning branch, and the senior research officer responsible for health and social service programs sit on the interdepartmental committee from the Department of Continuing Education.

The role of the Interdepartmental Committee on health manpower education is the development of policy with regard to health sciences, education and manpower in the province. The committee monitors health manpower requirements, and the outputs from health manpower training programs and develops strategies to balance the supply and requirements of health manpower. In addition, the committee provides for liaison on health manpower matters within the province, and at the interprovincial and federal/provincial level. The committee recommends and reveiws research studies on health manpower.

2. Department of Continuing Education

Within the Department of Continuing Education, the Policy, Planning and Management Information Systems Branch is responsible for planning related to post-secondary education. The Department has overall responsibility for community colleges, technical institutes, and occupational training while universities are under the jurisdiction of the Universities Commission. Health and Social Service Programs are offered at 2 technical institutes operated by the department.

The Senior Research Officer for Health and Social Service Programs is responsible for the monitoring enrolment and training levels, negotiating interprovincial training agreements, reviewing the implications of different training strategies and conducting follow-up surveys of health and social service graduates.

3. The Department of Health

The Health Manpower Division is located within the Policy Research and Management Services Branch reporting to the deputy minister. The division consists of research officers supported by a systems analyst.

The primary responsibility of the Department of Health is to ensure that the province has a satisfactory supply and distribution of adequately trained manpower in health professions and occupations.

Specific responsibilities include the maintenance of the health manpower monitoring system, and the preparation of the annual health manpower report, the administration of the establishment grants program, and liaison with the Department of Labour on immigration matters. The major manpower planning activities include studies of various health manpower problems, including recruitment, attrition, distribution and of policies concerning the regulation and licensing of health personnel.

4. The Saskatchewan Universities Commission (SUC)

The Saskatchewan Universities Commission (SUC) has responsibility for funding and program approval for the budgets submitted by the Universities of Saskatchewan and Regina. The SUC makes budgetary recommendations to the Minister of Continuing Education. Liaison is maintained with the Interdepartmental Committee on Health Manpower Education through the deputy minister of Continuing Education who is on the board of governors at each university. Each university has the responsibility for allocating funds for each program and has the autonomy to increase or decrease programs without consultation. The Universities Commission also has responsibility for reviewing requests from the universities for new programs. The Commission has established an Advisory Committee on Service Funding of Saskatchewan Medical Education with the mandate to plan for physician manpower with the College of Medicine.

5. Department of Northern Saskatchewan

The Health Services Branch of the Department of Northern Saskatchewan is responsible for providing health services to non-treaty residents in the northern part of the province.

Although the Health Services Branch has not been involved in health manpower planning, a comprehensive health study is being initiated to determine if the current manpower is being used in the most effective way. There is no formal coordinating mechanism between the Health Services Branch, Department of Northern Saskatchewan and the Departments of Health and Continuing Education.

6. Saskatchewan Health Care Association

The Saskatchewan Health Care Association (SHCA), a voluntary association of hospitals, special care homes, and auxilliaries, is actively involved in health manpower planning. Recently, the association established the Advisory Committee on Nursing Supply, Employment, and Education. The Advisory Committee also has representation from the Departments of Continuing Education, Health and the Nursing Associations. The Saskatchewan Health Care Association also cooperates with the Department of Health with respect to the employers survey.

7. Educational Institutions

Wascana and Kelsey Institues of Applied Arts and Sciences, the University of Saskatchewan, and the University of Regina have health training programs. Although Wascana and Kelsey Institutes are controlled by the Department of Continuing Education, the institutes can suggest program changes through the curriculum advisory committees.

All proposed program changes and expansions and/or contractions are department decisions.

The Universities are responsible for initiating proposals for new and expanded health programs. In the development of new proposals, the universities usually seek assistance from the professional associations, employers, and the Departments of Continuing Education and Health. Proposals are submitted to the Universities Commission for review. The Commission controls the development of new programs through the program approval and funding process.

2.4.2 Manpower Planning Methods and Activities

In this section, we discuss the methods used by the Interdepartmental Committee on Health Manpower Education in determining and projecting supply, requirements, and developing strategies to balance supply and requirements.

Health Manpower Supply

Each year the Health Manpower Division within Saskatchewan Health compiles the Saskatchewan Health Manpower Annual Report which provides information on the number and distribution for each manpower group. The report is based on the annual registrations of professional associations, and information from the health manpower monitoring system, and the post-secondary student information system.

The annual report also includes information from the Physician Mobility Model which is maintained by the Statistical Management and Evaluation Branch of the Health Care Insurance Commission. This computerized model has data on age, place of graduation, specialty, type and size of practice, and location for medical practitioners. The model is used by the Health Manpower Division in analysing intra-provincial migration, emigration and immigration of physicians to and from Saskatchewan.

Health Manpower Requirements

Health Manpower monitoring system, follow-up surveys of graduates and health manpower ratios are used to estimate current health manpower requirements.

The health manpower monitoring system is designed to monitor the supply and demand for health manpower. Since 1976, the Department of Health has conducted a semi-annual survey of employers for this purpose. All hospitals, special care homes, government departments, and dental and medical practices with three or more employees are included in the mail survey with follow-up by telephone. The survey collects information on the number of personnel and vacant positions, by full and part-time . The respondent is also asked about turnover rates and the ease of recruitment. Presently, 31 occupations are included in the survey. The responses, which are computerized, are analysed by employer category, region, size of institution, and over time. No reports are published but the information is available by special request.

Follow-up surveys of graduates of health science programs at technical institutes were initiated in 1974 to determine health manpower requirements. The Department of Continuing Education sends mail-back questionnaires to graduates of health science programs at Kelsey and Wascana Institutes six months after graduation. The mail survey gathers data on job search, employment, and students preception of adequacy of the training. A second follow-up survey is conducted approximately 18 months after graduation. There is a standard questionnaire for all programs with provision for supplementary questionnaires for particular programs.

The Policy Planning Branch of Continuing Education in cooperation with the Universities of Saskatchewan and Regina monitors changes and developments in the university sector and collects statistical data on quotas, applications, enrolments, and graduates.

While the universities do not conduct regular follow-up surveys of graduates, a number of special studies have been done.

The Department of Health uses personnel to population ratio and special surveys to estimate requirements. Personnel to population ratios are used for various professions, as there is a close correlation between registered and active personnel. Special studies and surveys, including research of dental and foot care personnel needs have also been conducted.

3. Strategies and Solutions

The Interdepartmental Committee on Health Manpower Education considers a wide range of strategies and solutions by which to balance health manpower requirements and supply. These include changing the enrolment quotas of health training programs, reserving places for Saskatchewan residents in health training programs in other provinces through interprovincial training agreements, developing new categories of health manpower, establishment grant programs to encourage physicians and dentists to set up practices in rural Saskatchewan, student bursaries, potential of modifying employment practices to enhance the attractiveness of a profession, and legislative changes to increase supply such as dropping additional examination requirements.

2.4.3 Findings

The Health Services Branch, Department of Northern Saskatchewan, has not been involved in health manpower planning, and there is no formal coordinating mechanism between this Branch, and the Departments of Health and Continuing Education. The basic procedures for manpower planning are adequately developed, although there is a need to develop a forecasting model for health manpower supply and requirements.

2.4.4 RECOMMENDATIONS

- That a formal process be developed to ensure liaison on manpower planning activities between the Department of Health and the Department of Continuing Education, and the Department of Northern Saskatchewan.

- That the Province develop a forecasting model for health manpower supply and requirements.

- That the follow-up surveys be expanded to cover university students.

2.5 MANITOBA

2.5.1 Responsibility For Health Manpower Planning

The organization structure of health manpower in the Province of Manitoba can be summarized as informal, to the extent that although various committees and work groups discuss and liaise on manpower issues, there is no formal mechanism at the government level below the cabinet level for the coordination of Health and Education matters.

The Research Branch of the Department of Health has the major provincial responsibility for health manpower planning. This section is supplemented by a number of work groups and informal committees.

1. Research Branch, Department of Health

In the area of health manpower planning the Research Section has three major responsibilities, to develop and maintain a provincial health manpower data base, to identify health manpower needs, demands, supply and training outputs for the health region level and to advise on the requirement for, and feasibility of major programs and policies in the area of health manpower.

In undertaking these objectives, the staff of the research section are responsible for updating and maintaining medical, nursing and dentist manpower data for processing on the General Manpower Stock Simulation Model at the Health Manpower Research Unit, University of British Columbia. In addition, the Planning and Program Analyst prepares the registry of licensed practical nursing, and Manitoba Association of Physiotherapists for computerization. Particular emphasis is paid to the supply of registered nurses, and licensed nurse practitioners, and the research section monitors the labour force situation with Canada Employment and Immigration Commission, and the Manitoba Health Organization. Currently, two work groups are reviewing the nurse supply situation and other nursing manpower issues. One work group is internal to the government and consists of the Research Director, the Planning and Program Analyst, Director of Programs, Community Colleges Division, Department of Education and the Manager of Manpower and Education at the Manitoba Health Services Commission. The second work group includes representatives from the health care groups/associations. Membership consists of the Research Director and Planning and Program Analyst, Department of Health, Manager Manpower and Education, Manitoba Health Services Commission, the Registrar, Manitoba Association of Registered Nurses and the Research Director, Manitoba Health Organization Inc.

In addition to the membership in the above working groups, the Research Branch are responsible for the analysis of results from research activities in manpower, the preparation and printing of the annual Health Manpower Provincial Report, and for the preparation of special reports for interprovincial, and Federal provincial health manpower groups.

2. Informal Committee On Health Manpower

The Manpower Committee in Manitoba appears to have no formal terms of reference, and yet it is the major co-ordinating group for health manpower and education matters within the Government of Manitoba. The committee consists of the Research Director, Department of Health, the Deputy Minister and Assistant Deputy Minister of Institutional Services, Department of Health, the Director of Programs, Community Colleges Division, and the Executive Director University Grants Commission. The committee meets frequently to discuss ongoing health manpower issues including stock, supply, mobility, attrition and changes to legislation. The committee also acts as a policy clearance group and reviews the material for the Western Canada Post-Secondary Health Manpower Requirements Sub-

Committee. The two members from Manitoba on this inter-provincial sub-committee are drawn from the Manpower Committee. In addition to frequent meetings, there are regular conversations between members.

3. Medical Manpower Sub-Committee

This sub-committee of the Medical Manpower Committee was established in February, 1980. It is primarily intended to address the problem of availability of Physicians in rural Manitoba. The committee consists of representatives from the Manitoba Health Services Commission, the College of Physicians and Surgeons of Manitoba, the Manitoba Medical Association, the Union of Urban Municipalities, the Intern and Residents Association, the Association of Rural Manitoba Municipalities and the Manitoba Health Organization. The committee reports to the Deputy Minister of Health.

4. Manitoba Health Organizations Inc.

The Manitoba Health Organizations Inc. is the provincial organiztion representing health care institutions and care provider facilities. In addition, several associations maintain associate memberships including the Manitoba Association of Registered Nurses. The Manitoba Health Organization Inc. conducts periodic vacancy surveys amongst members, and through the Research and Planning Branch conducts periodic studies of health manpower related subjects. These have included two reports, one of Health Care for the Next Generation and the second on the results of the Nursing Survey. The MHO Inc. is represented on the working group on Nursing Manpower.

5. Government of Manitoba

At the Ministerial level the Community Services Committee is responsible for co-ordinating general areas of interest between ministeries. The committee is chaired by the Minister of Health, and includes the ministers of Community Services and Corrections, Education and Agriculture. At the next level the majority of contact between ministries are made at the Deputy Minister level. To date, no formal process has been developed to support the manpower planning activities between the Departments of Health and Education. Yet in reality, the informal process appears to allow for the exchange of information between groups.

2.5.2 Health Manpower Planning Methods and Activities

In this section, we described the manpower planning methods and activities of the Research Branch, Department of Health, and the role of the Manitoba Health Services Commission in conducting vacancy surveys. Methods and activities related to supply, requirements and the development of strategies and solutions to meet net requirements are discussed separately.

1. Health Manpower Supply

The Research Branch, Department of Health, maintains a manpower data base, and collects statistics on the output of training programs, and forecasts manpower stock. The data bases are developed in conjunction with professional associations and licensing bodies. The information is collected from mailing lists, membership rosters, and surveys of employers. The data base, which currently consists of 51 occupational groups, is of two types:

- computer based and updated by the research unit
- derived from membership lists collected by the research unit, and supplemented by periodic questionnaires and updates.

The research section also have access to functional data on physician utilization from the Manitoba Health Services Commission. The projection of supply on dentists, registered nurses and physicians are produced using the General Manpower Stock Simulation Model (GMSS) through the Health Manpower Research Unit, University of British Columbia. (For a brief summary of GMSS, please see page ___).

2. Requirements For Health Manpower

The Research Branch estimates requirements for health manpower using various methods including:

- manpower ratios
- survey of vacancies
- physician utilization/services

These methods are described below.

Manpower ratios based on current population practitioner ratios are primarily used to estimate health manpower requirements. The Research Section projects a five year future trend for each occupational category (with the exception of dentists, registered nurses and physicians) for each Manitoba Health and Community Services region based on the continuation of the current status quo, i.e., the number of practitioners required to keep the population ratio constant. In addition, provincial ratio of each occupation is compared to the national ratio.

Training projection for actual graduate outputs are obtained from each training institution. Where these were not readily available, the size of the graduating class was used in projecting supply, but no attempt was made to allow for attrition.

In addition to the projection of 5 year manpower requirements based on current population ratios, the Research Branch, and the Manpower and Education department, Manitoba Health Services Commission complete monthly surveys of nursing vacancies, semi-annual surveys of speech pathologists and audiologists, medicine, pharmacy, and dentistry, and surveys of other occupations as required.

3. Strategies and Solutions

Various policy alternatives are assessed by the Research Branch, Department of Health, and by the Manpower Committee. Normally, solutions are discussed on a project by project basis, often in conjunction with a working group (i.e, nursing manpower, distribution of physicians in rural Manitoba). A number of policy options have been, and are evaluated including relocation grants and additional incentives to encourage practitioners to settle in remote locations, additional training, refresher training and skill upgrading programs.

2.5.3 Findings

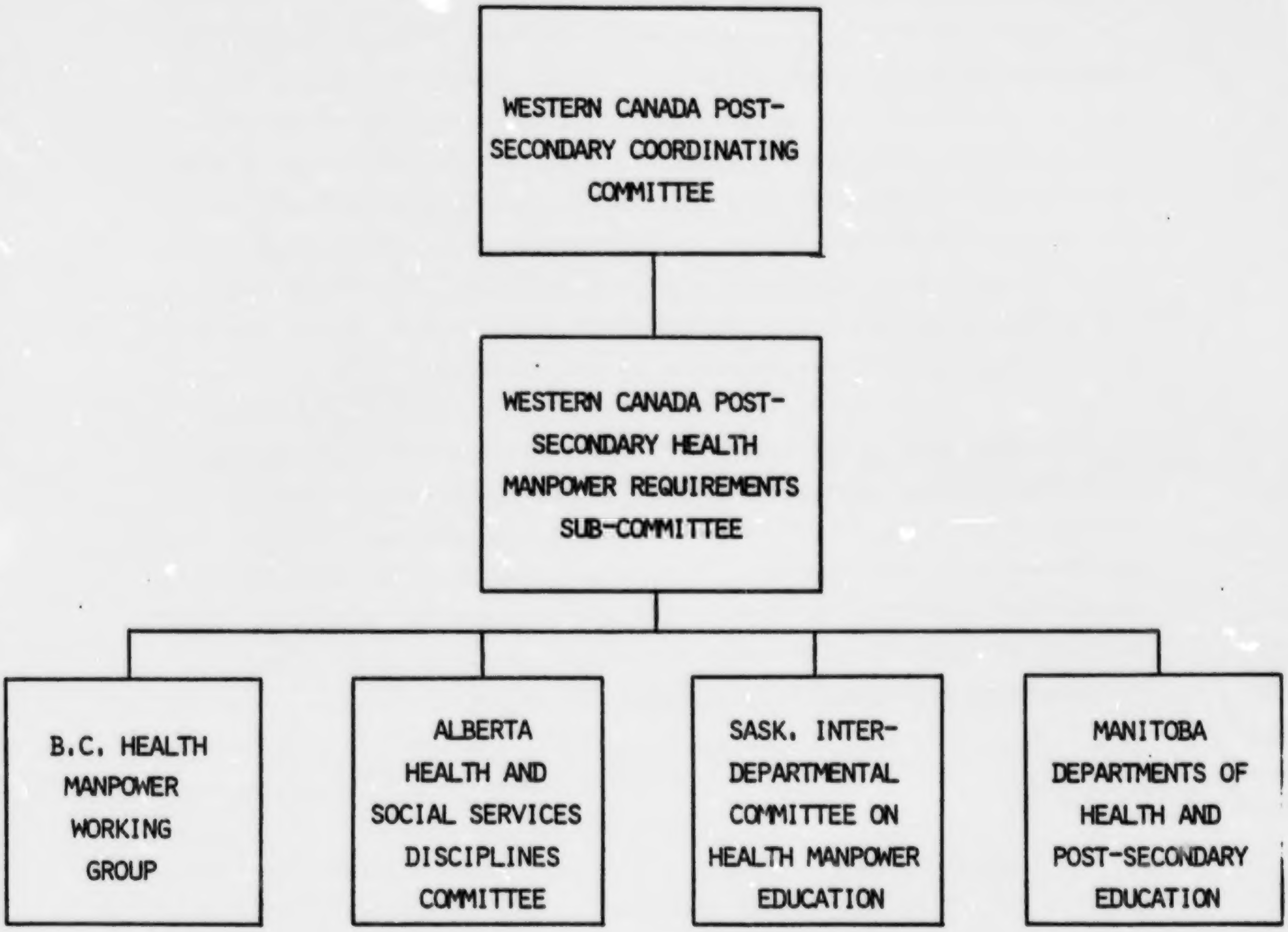
There is currently no identified mandate or terms of reference for the informal manpower committee in Manitoba. The rudimentary procedures for the collection of data on current manpower levels are adequate. There is, however, a need to develop a model for estimating health manpower requirements and for estimating supply of those occupations not covered by the General Manpower Stock.

2.5.4 RECOMMENDATIONS

- That formal terms of reference be developed for the manpower committee.
- That Manitoba develop a forecasting model for estimating health manpower requirements.
- That greater use be made of follow-up surveys of graduates.
- That the Manitoba Health Services Commission data base be used more extensively in manpower planning.

EXHIBIT 4

ORGANIZATION OF HEALTH MANPOWER PLANNING IN WESTERN CANADA


WESTERN CANADA POST-SECONDARY COORDINATING COMMITTEE
WESTERN CANADA POST-SECONDARY HEALTH MANPOWER REQUIREMENTS SUB-COMMITTEE
B.C. HEALTH MANPOWER WORKING GROUP
ALBERTA HEALTH AND SOCIAL SERVICES DISCIPLINES COMMITTEE
SASK. INTER-DEPARTMENTAL COMMITTEE ON HEALTH MANPOWER EDUCATION
MANITOBA DEPARTMENTS OF HEALTH AND POST-SECONDARY EDUCATION

2.6 WESTERN CANADA

2.6.1 Responsibility For Health Manpower Planning

The Western Canada Post-Secondary Health Manpower Requirements Sub-Committee is the inter-provincial coordinating mechanism for health manpower planning. The sub-committee is composed of representatives at the senior level from the Departments of Health and Post-Secondary Education in each of the Western Provinces and reports to the Western Canada Post-Secondary Coordinating Committee. The ministers and deputy ministers of Post-Secondary Education make up the coordinating committee. The province with the chairman of the W.C.P.S.C.C., has generally chaired the Sub-Committee.

The general mandate of the Health Manpower Requirements Sub-Committee is to promote close liaison and communication in the health manpower field on a Western Canada basis. Specifically, the Sub-Committee's functions are, to determine the training needs for health care personnel, to develop integrated planning for the delivery of educational programs for health personnel, and to make recommendations to the W.C.P.S.C.C.[1]

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[1] Philippon, D., Overview of the Health Manpower Requirements Sub-Committee, June, 1980.

2.6.2 Activities of the Health Manpower Requirements Sub-Committee

The health manpower activities of the Sub-Committee have been concentrated on information exchange, interprovincial training agreements, program proposal review, health-education coordination, and summary reports. Information exchange is facilitated through the semi-annual meetings. There are two categories of agenda items: formal and interest topics. The formal topics are items which require recommendations to the W.C.P.S.C.C., while the interest topics refer to health personnel developments of current interest. As background for meetings, each province submits a status report covering legislation, training programs, organization changes , manpower supply and requirements, and research as well as a list of recent reports on health personnel. Besides providing a formal mechanism for discussion and circulation of reports, the establishment of the Sub-Committee has resulted in a network of education and health officials in Western Canada who consult with one another on an informal basis.

Interprovincial Training

The sub-committee has monitored training needs for health personnel at the regional level and facilitated the development of interprovincial training agreements.

These training agreements guarantee a certain number of places to qualified residents and protect students in the program for a specified period in return for cost reimbursement. As applicants apply directly to the institution, the province is only involved in verifying residency status.

Program Proposal Review

Another activity of the committee is the review of the program proposals. Program proposals arising in individual provinces are often brought to the Sub-Committee for comment regarding the need for the program on a regional basis.

Health Education Coordination

At the semi-annual meetings, the Health Manpower Requirements Sub-Committee has given significant attention to the coordination of the health and education systems in the health manpower field. In Western Canada, the Departments of Health have the major responsibility for identifying health manpower requirements while the role of the Departments of Post-Secondary Education is providing the training to meet additional manpower requirements.

2.6.3 Manpower Planning at the Western Region Level

Effective manpower planning at both the provincial and Western Canada regional level consists of three steps. These involve:

- the definition of long-term health care strategy,
- the definition of the manpower implications of this strategy,
- the development of appropriate training responses to meet the defined manpower needs.

The majority of detailed planning occurs at the provincial level. There is also however, a need to coordinate health care/manpower planning at the regional level. The manpower planning activities at this level are limited to the aggregation of Western Canada manpower trends/needs and the identification of manpower acquisition strategies.

2.6.4 Findings

At the Western Canada regional level there is no adequate vehicle for the development of long-term health care strategies and related manpower strategies. The Western Canada Health Manpower Requirements Sub-Committee provides an excellent vehicle for inter-provincial planning for training programs at the regional level. The primary orientation of this sub-committee is, however, educational.

There is a need for a complementary inter-provincial group to concentrate on strategic health care planning in Western Canada. This new committee should focus on the development of Western Canada regional interaction, the coordination of health care program and policies, the development of long-term health care strategies, and the identification of long-term manpower needs.

This committee should also provide direct input into the manpower planning process. Potential output should be the definition of projected manpower needs to input into the Western Canada Manpower Requirement Sub-Committee as the basis for training strategies. We suggest that the senior manpower planners should be members of both committees and would form the link between Strategic Health Care Planning and Health Education. We suggest that through this committee there be an active exchange of information on manpower planning systems, approaches and specific research projects. We also suggest that further attempts be made to standardize methodological approaches for manpower modelling, survey questionnaire documents, techniques for determining manpower requirements, and relevant legislation.

2.6.5 RECOMMENDATIONS

- That a new interprovincial Committee be established (to be named the Western Canada Health Care Planning Committee) to stimulate the development of long-range health care strategies and to assess the implications of these strategies on health manpower needs.

- That membership in this committee be composed of deputy ministers, and that strategic planners and manpower planners in the respective departments of government responsible for the provision of health and social services from a secretariat to this committee.
- That the mandate of the existing Western Canada Health Manpower Requirements Subcommittee of the Western Canada Post-Secondary Coordinating Committee be restricted to the determination of training responses to meet the identified needs for health manpower. In keeping with this limited mandate, this subcommittee should be re-named the Western Canada Health Manpower Training Subcommittee.

APPENDIX A

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Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

Section II – Report C

A DECISION PROCESS TO EVALUATE THE LOCATION OF AND FUNDING ARRANGEMENTS FOR HEALTH OCCUPATION TRAINING PROGRAMS IN WESTERN CANADA

Report C - A DECISION PROCESS TO EVALUATE THE
LOCATION OF AND FUNDING ARRANGEMENTS FOR HEALTH
OCCUPATION TRAINING PROGRAMS IN WESTERN CANADA

SECTION II - REPORT C

A DECISION PROCESS TO EVALUATE THE LOCATION OF, AND FUNDING ARRANGEMENTS FOR HEALTH OCCUPATION TRAINING PROGRAMS IN WESTERN CANADA

JANUARY, 1981

A DECISION PROCESS TO EVALUATE THE LOCATION OF, AND FUNDING ARRANGEMENTS FOR HEALTH OCCUPATION TRAINING PROGRAMS IN WESTERN CANADA

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A DECISION PROCESS TO EVALUATE THE LOCATION OF, AND FUNDING ARRANGEMENTS FOR HEALTH OCCUPATION TRAINING PROGRAMS IN WESTERN CANADA

1.0 INTRODUCTION

The objective of this study is to present recommendations for the rationalization of the location and funding arrangements for health occupation training programs in Western Canada. In order to achieve this objective, we have developed a decision process to be applied to each occupation. This decision process is designed to allow for the logical and consistent evaluation of a range of alternative training arrangements. There are seven steps in the process:

- the analysis of net manpower requirements
- the identification of the appropriate type of training
- the definition of alternative training arrangements/locations
- the evaluation of alternative locations
- the development of timing and duration for alternatives
- the recommendation of a perferred option
- the recommendation for funding alternatives

In this paper, we describe the interaction of these seven steps in the evaluation of alternative training locations and funding arrangements. In addition, we review criteria which will be used to evaluate alternative locations. Section 3 outlines basic principles to form the basis for future interprovincial funding arrangements. In Section 4, we review the profile of existing training programs in Western Canada.

EXHIBIT 1. THE DECISION PROCESS TO EVALUATE TRAINING ALTERNATIVES - REQUIREMENT

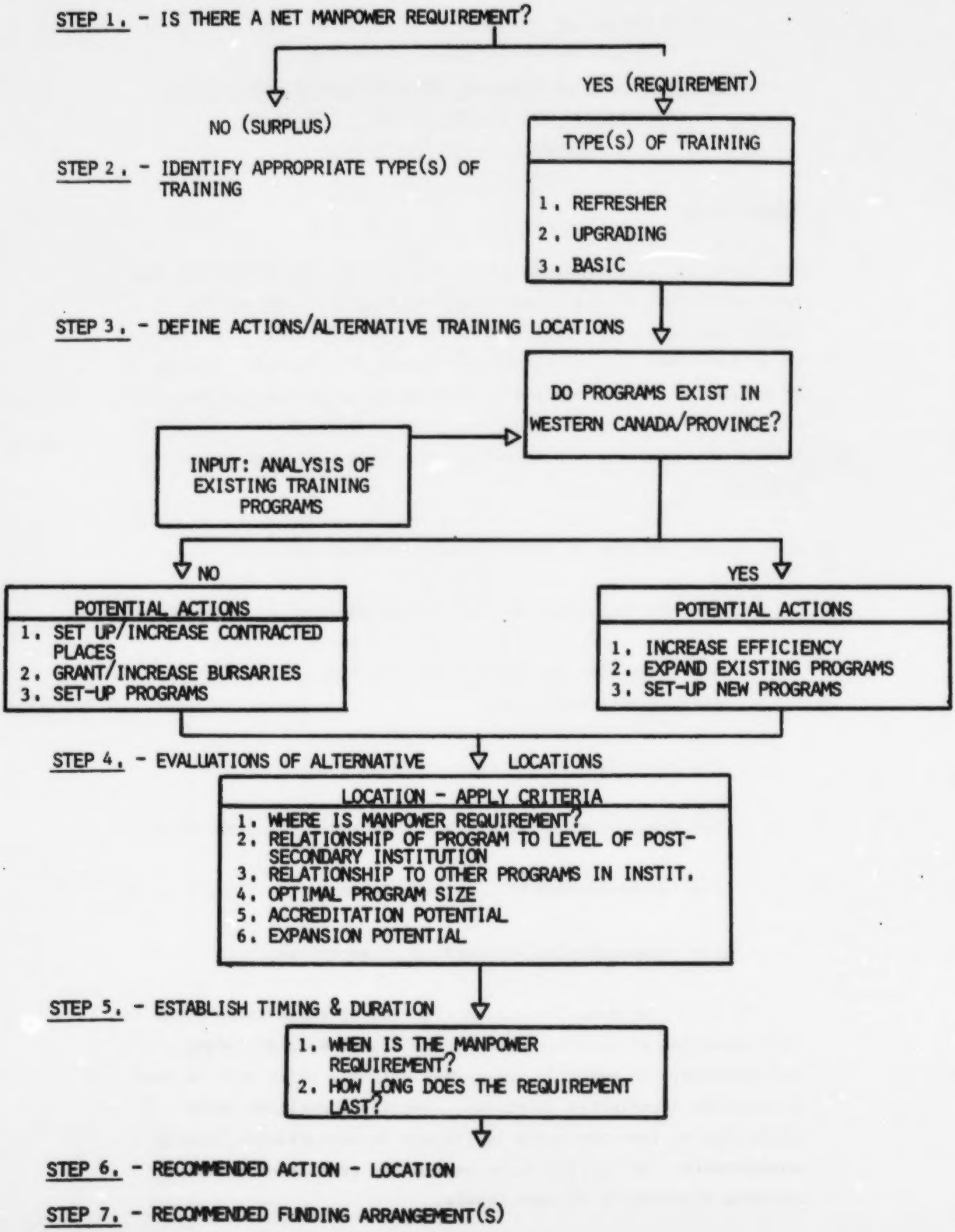
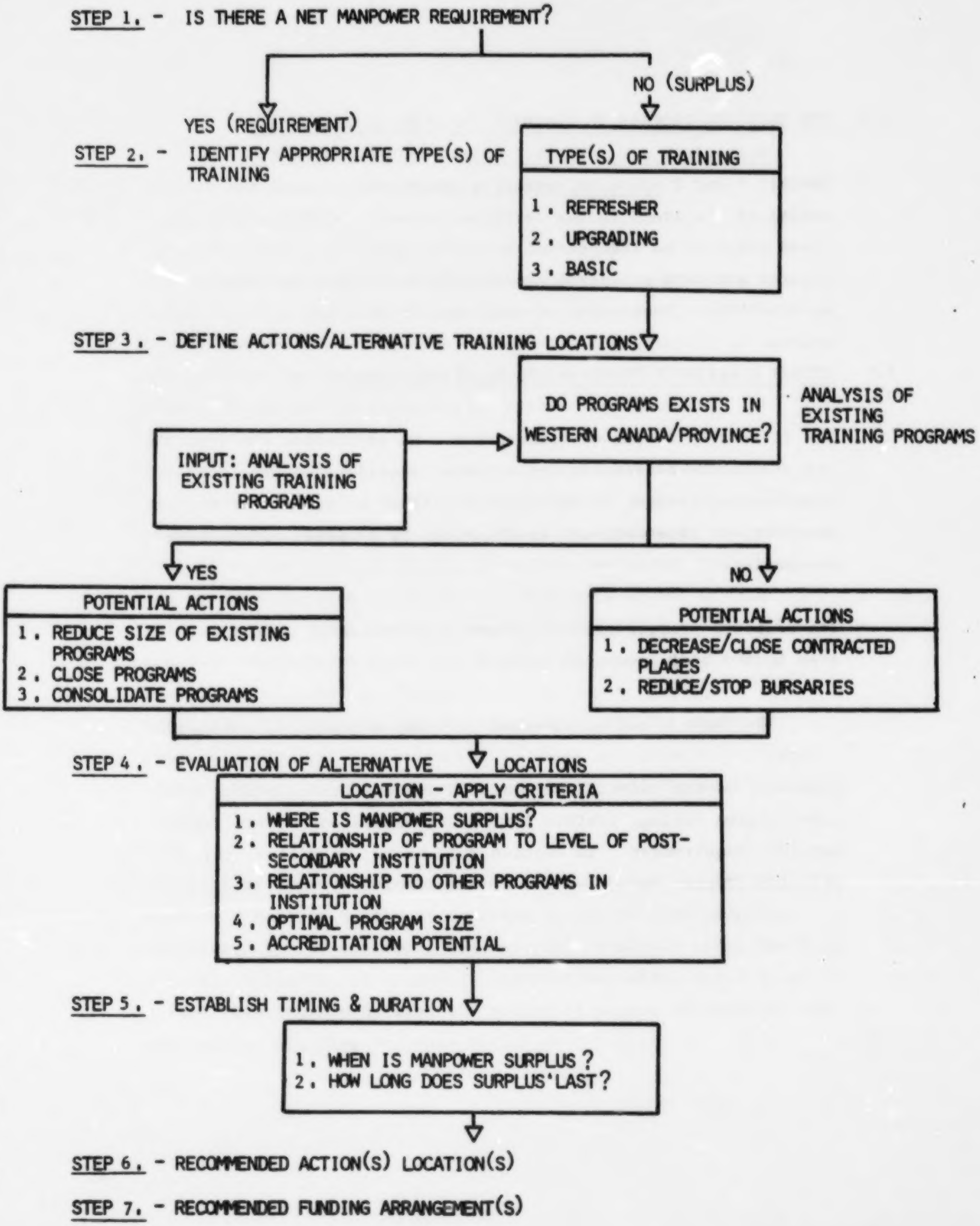

STEP 1. - IS THERE A NET MANPOWER REQUIREMENT?
NO (SURPLUS)
YES (REQUIREMENT)
STEP 2. - IDENTIFY APPROPRIATE TYPE(S) OF TRAINING
TYPE(S) OF TRAINING
1. REFRESHER
2. UPGRADING
3. BASIC
STEP 3. - DEFINE ACTIONS/ALTERNATIVE TRAINING LOCATIONS
DO PROGRAMS EXIST IN WESTERN CANADA/PROVINCE?
INPUT: ANALYSIS OF EXISTING TRAINING PROGRAMS
NO
YES
POTENTIAL ACTIONS
1. SET UP/INCREASE CONTRACTED PLACES
2. GRANT/INCREASE BURSARIES
3. SET-UP PROGRAMS
POTENTIAL ACTIONS
1. INCREASE EFFICIENCY
2. EXPAND EXISTING PROGRAMS
3. SET-UP NEW PROGRAMS
STEP 4. - EVALUATIONS OF ALTERNATIVE LOCATIONS
LOCATION - APPLY CRITERIA
1. WHERE IS MANPOWER REQUIREMENT?
2. RELATIONSHIP OF PROGRAM TO LEVEL OF POST-SECONDARY INSTITUTION
3. RELATIONSHIP TO OTHER PROGRAMS IN INSTIT.
4. OPTIMAL PROGRAM SIZE
5. ACCREDITATION POTENTIAL
6. EXPANSION POTENTIAL
STEP 5. - ESTABLISH TIMING & DURATION
1. WHEN IS THE MANPOWER REQUIREMENT?
2. HOW LONG DOES THE REQUIREMENT LAST?
STEP 6. - RECOMMENDED ACTION - LOCATION
STEP 7. - RECOMMENDED FUNDING ARRANGEMENT(S)

EXHIBIT 2 : THE DECISION PROCESS TO EVALUATE TRAINING ALTERNATIVES - SURPLUS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INPUT: ANALYSIS OF EXISTING TRAINING PROGRAMS
YES
NO
POTENTIAL ACTIONS
1. REDUCE SIZE OF EXISTING PROGRAMS
2. CLOSE PROGRAMS
3. CONSOLIDATE PROGRAMS
POTENTIAL ACTIONS
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2. HOW LONG DOES SURPLUS'LAST?
STEP 6. - RECOMMENDED ACTION(S) LOCATION(S)
STEP 7. - RECOMMENDED FUNDING ARRANGEMENT(S)

2.0 THE DECISION PROCESS TO EVALUATE TRAINING ALTERNATIVES

Exhibit 1 and 2 opposite, shows in diagramatic format the interaction of the steps in the decision process. Although each of these steps is an independent activity, they are closely interrelated and form a logical process for reviewing training alternatives. Discussion of each step follows.

2.1 STEP 1 - ANALYSIS OF NET MANPOWER REQUIREMENTS

The first step in the decision process is to analyse the nature of the previously determined net manpower requirement. The net manpower requirement is expressed as either a requirement for manpower, or alternatively as a surplus of manpower within each occupation.

The decision process can be defined as a series of questions. In Step 1, the basic question is:

- Is there a net requirement for manpower in this occupation?

Dependent on the answer, the decision process branches into two sub-decision tables. Exhibit 1 shows the decision process for a manpower requirement. In Section 2.7, below, we discuss the decision process for a surplus of manpower.

Manpower Requirements as Basis For The Evaluation Of Training Alternatives

The methodology for determining net manpower requirements is presented in a separate discussion paper (see Section II-Report A, Health Manpower Planning Approaches). In the analysis of manpower requirements, a number of projections are made to evaluate the impact of changes in productivity, labour mobility and occupational incentives on the supply of manpower. From this analysis, a number of alternative strategies to training are assessed to determine their potential impact on the net manpower requirement. Examples of the alternative strategies include migration, immigration, return to active employment from inactive, and movement between occupations. Dependent on the outcome of this analysis, there may be a number of solutions to the defined manpower requirement which lie outside the scope of training programs, for example, financial incentives to attract practitioners, changed labour practices to attract inactive practitioners, etc. Alternatively, these solutions might have minimal impact on the manpower requirement, and the only realistic solution may be to increase training output.

The evaluation of alternative sources of manpower is intended to develop a greater degree of accuracy in the defined manpower requirements. In addition, however, this analysis forms the basis for the evaluation of training alternatives, since there is a direct relationship between the potential source of manpower and the type of training response required.

2.2 STEP 2 - THE IDENTIFICATION OF THE APPROPRIATE TYPE(S) OF TRAINING

The second step in the decision process is to identify the appropriate training type(s). There are three types of training to consider in relation to the manpower requirement defined in Step 1 above. These are:

- 1 - Refresher
- 2 - Upgrading
- 3 - Introductory Skills

The decision process in Step 2, consists of a series of questions specific to each option. These questions are presented below under each type of training option.

Refresher Programs

DEFINITION: Refresher training is defined as the provision of training programs to individuals who have not recently actively practiced their appropriate skills, in order to allow them to return to the active labour pool.

Whether refresher training is an appropriate type of training response to the defined manpower requirement depends on the size of the inactive labour force in the occupation. The basic question to answer:

- Is there a large inactive work force with the potential to return to the active labour pool?

Dependent on the occupation and the province, this option may present a training alternative.

Upgrading Programs

DEFINITION: Upgrading training is defined as the provision of training programs to individuals with related occupational skills, who, with additional training programs could qualify to practice in the occupation under review. Upgrading usually assumes some basic common core subjects/programs. Upgrading training might also include identified training needs as a result of changing technology.

The decision to provide Upgrading programs in response to a defined manpower requirement is based on two key considerations. These are:

1. Is there a career ladder progression from a sub-occupation to the occupation under review?
2. Is there a surplus of manpower in the sub-occupation to provide candidates for upgrading?

Dependent on the occupation, and the province, this option may represent a training alternative.

Introductory Skill Programs

DEFINITION: Introductory skills training is defined as the provision of training programs to individuals who meet specific educational standards to develop skills and knowledge appropriate to the occupation.

Introductory skills programs are an appropriate type of training response to the defined manpower requirement only if Refresher and Upgrading options fail to satisfy the manpower requirement. Therefore, the basic question is:

- Does the potential output from Refresher and Upgrading programs satisfy the manpower requirement?

Dependent on the occupation and province, this option may represent the appropriate training strategy.

Summary of Step 2

In summary, therefore, the appropriate type of training is identified by analysing three options in relation to the defined manpower requirement. Potentially any combination of the three types of training might be indicated, dependent on the occupation and province. Each type of training will be analysed independently through the subsequent steps in the decision process.

2.3 STEP 3 - THE DEFINITION OF ALTERNATIVE TRAINING LOCATIONS

The third step in the decision process is to define alternative locations, and arrangement for training programs specific to each occupation. Based on the analysis in Step 2, above, we will select each type of training identified as a potential solution and continue this option through the decision process. The first question is:

- Does this type of training program exist in Western Canada (province)? (Type means Refresher, Upgrading, Introductory Skills

The input into the decision process will be the analysis of existing training programs in Western Canada. The analysis for each occupation category will be presented in a separate discussion paper. (see Scope of Existing Training Programs Category - Occupations).

Dependent on the current availability of training programs in Western Canada, the decision process branches into two sub-decision tables. These are discussed separately.

2.3.1 Training Programs Exist in Western Canada/Province

Where the type of training programs under review exist in Western Canada/Province, we consider three potential alternative actions:

- increasing the efficiency of existing programs
- expansion of existing programs
- setting up new programs

Increasing The Efficiency of Existing Programs

In this component of the decision process, we will determine the potential to increase the efficiency of existing training programs. This will be evaluated by considering the following factors:

- Attrition during training, i.e., enrolment in first year minus graduation on completion of training
  - What causes attrition during training program?
  - Can attrition be reduced?
- Length of program, including the potential to increase the teaching time in the academic year
  - What is the normal duration of this kind of program?
  - Can the normal duration be reduced by other arrangements?
- Size of first year enrolments in relation to optimal program size.
  - What is the optimal and maximum potential size of program?
  - How does this relate to current enrolment?

Expansion of Existing Programs

In this component, the potential to expand the size of the existing programs is evaluated. For each occupation training program, we will attempt to determine the maximum potential size for a program. In addition, we will attempt to define the program constraints against expansion, (Note: Program constraints are independent of location constraints which will be considered under the criteria specific to each location, Step 4 below). We will attempt to answer the following questions:

- What is the maximum enrolment?
- What are the program constraints that may limit this alternative?

Setting Up New Programs

Although training programs may currently exist in Western Canada, we will review the manpower requirement relative to training output to determine whether additional programs are justified. We will review other institutions to determine a range of alternative locations for evaluation in Step 4, discussed below. The following questions need to be answered to determine the need to set up a new program:

- after considering increasing the efficiency, and expanding existing programs, is there still a net manpower requirement?
- does this net manpower requirement justify additional training programs at the provincial/regional level?
- if net requirement does still indicate additional manpower requirements, how many programs are indicated? (based on minimum, optimal and maximum numbers per program).
- is there the potential to develop a program in one province to serve the requirements of other provinces in Western Canada through interprovincial training arrangements.

Summary of Step 3 For Existing Programs

For each type of training program that currently exists in Western

Canada, we will determine the potential for satisfying the net manpower requirement through the sequence outlined above.

2.3.2 Training Programs That Do Not Exist In Western Canada/Province

Where training programs for the type of training under review do not exist in Western Canada/Province, three potential alternative actions are considered:

- setting up or increasing contracted places
- granting or increasing the number of bursaries
- setting up new programs

Setting Up Or Increasing Contracted Places

In this component of the decision process, we will evaluate the potential to contract for training programs external to the Western Provinces. For each occupation training program, the following questions will need to be answered:

- Do training programs exist in Canada?
- Are there are current training contracts between Western Provinces and host provinces?

- Can these existing contracts be expanded?
- if there are no existing contracts, could Western Provinces secure places? How many? and for how long?
- are places available in the quantity and time required?

Granting or Increasing The Number of Bursaries

In this component, we will evaluate the potential to either grant or increase the number of bursaries for the occupation. For each occupation training program, the following questions will need to be answered:

- Are program places available for individuals from Western Canada?
- Does the number of people returning to practice professionally in Western Canada justify the steps to grant or increase the number of bursaries?
- Are there additional incentives to encourage the individual to return to practice in the province granting the bursary?

Set Up New Programs

We will determine the potential to set up a training program in Western Canada. Essentially in this stage, we are attempting to determine if there are institutions in Western Canada that could offer the program. This will establish a range of alternative locations for evaluation in Step 4, below. We will answer the following questions:

- Is the type of program based at University, Community College, Technical College, Vocational, etc.?
- Does the program logically relate to"other programs"?
- Do these "other programs" exist in specific institutions?
- Does this institution have the potential to offer the program?

Summary of Step 3 For Training Programs That Do Not Exist In Western Canada

For each type of training program, we will determine the potential to satisfy the net manpower requirement through the sequence outlined above. We will identify one, or a combination of types of training, and a range of location (campuses/institutions) for evaluation in Step 4 of the decision process.

2.4 STEP 4 - THE EVALUATION OF ALTERNATIVE LOCATIONS FOR NEW PROGRAMS AND EXPANSION OF EXISTING PROGRAMS

The fourth step in the decision process is to evaluate the alternative locations for new programs or for the expansion of existing programs defined in Step 3, above. In this step, we evaluate each alternative against general criteria to determine the recommended alternative(s). The broad criteria have been priorized to assist in a logical sequence of evaluation. Essentially, the criteria are designed to assist in a process of elimination, or refinement of alternatives. There are six criteria to be used in the selection of recommended alternatives. These are discussed below.

Criteria #1 - Location of Manpower Requirements (Province)

Based on the analysis of manpower requirements, we will determine the province(s) where there is a net manpower requirement, or manpower surplus. This will indicate potential locations for alternative training locations. For example, where a province has a significant net requirement for additional manpower, it may be appropriate to locate the program in that province. It should be noted, however, that location of manpower requirement should not be the sole criterion for the potential location of training programs, and need not necessarily determine the location of training.

Criteria #2 - Relationship of the Program to Level of Post-Secondary Institution

Based on experience in other areas, we will determine the level of institution for the occupation training program, i.e., should the program be located at a Community College, Technical Institute, University, etc.

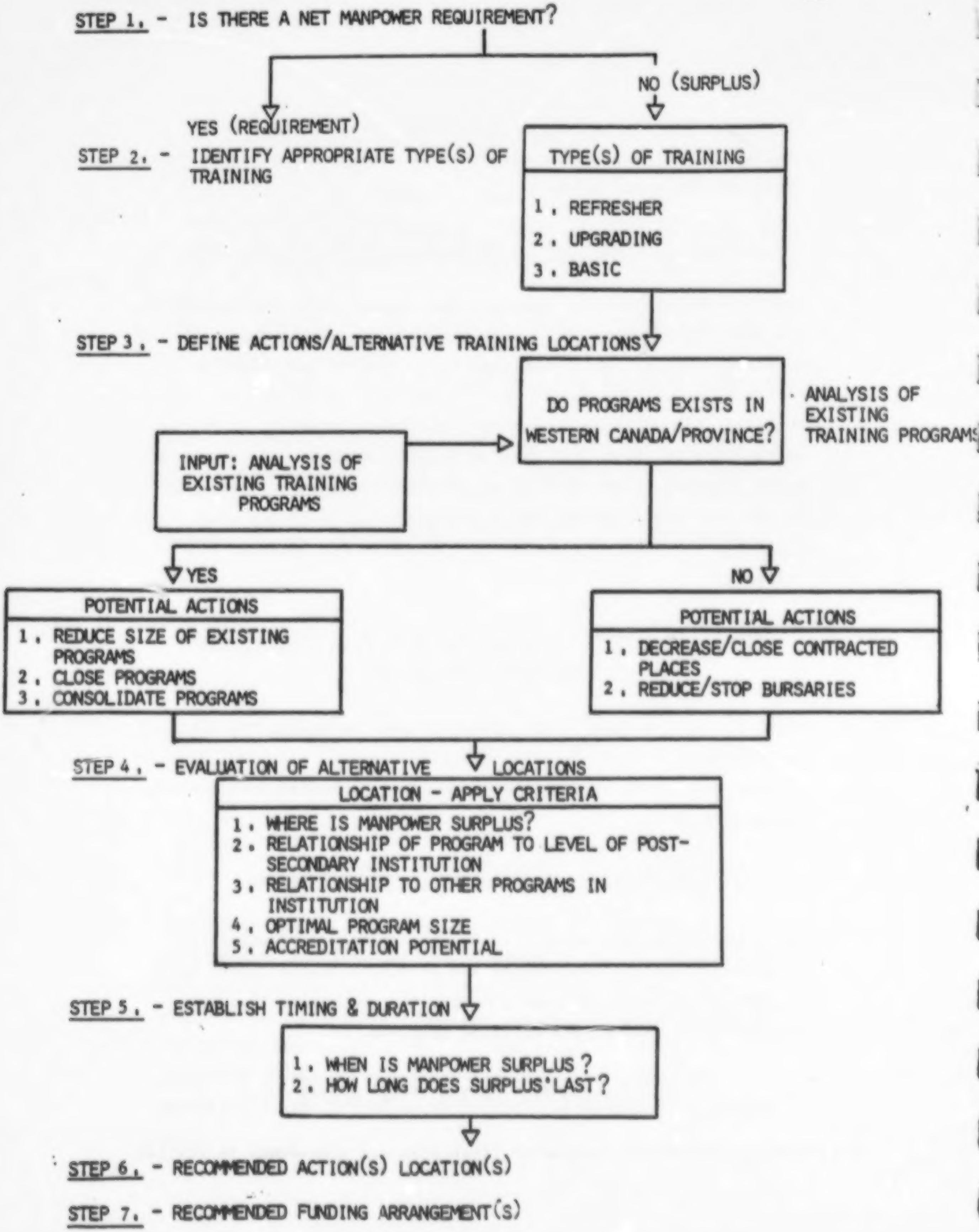
Criteria #3 - Relationship to Other Programs

Using this criteria, we will review the structure of existing programs within the institution and determine whether there is a logical relationship between the specific occupation training program under review and existing programs.

Criteria #4 - Optimal Program Size

Through interviews, review of literature and precedents in similar

EXHIBIT 2 : THE DECISION PROCESS TO EVALUATE TRAINING ALTERNATIVES - SURPLUS


STEP 1. - IS THERE A NET MANPOWER REQUIREMENT?
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2. UPGRADING
3. BASIC
STEP 3. - DEFINE ACTIONS/ALTERNATIVE TRAINING LOCATIONS
DO PROGRAMS EXISTS IN WESTERN CANADA/PROVINCE?
· ANALYSIS OF EXISTING TRAINING PROGRAMS
INPUT: ANALYSIS OF EXISTING TRAINING PROGRAMS
YES
NO
POTENTIAL ACTIONS
1. REDUCE SIZE OF EXISTING PROGRAMS
2. CLOSE PROGRAMS
3. CONSOLIDATE PROGRAMS
POTENTIAL ACTIONS
1. DECREASE/CLOSE CONTRACTED PLACES
2. REDUCE/STOP BURSARIES
STEP 4. - EVALUATION OF ALTERNATIVE LOCATIONS
LOCATION - APPLY CRITERIA
1. WHERE IS MANPOWER SURPLUS?
2. RELATIONSHIP OF PROGRAM TO LEVEL OF POST-SECONDARY INSTITUTION
3. RELATIONSHIP TO OTHER PROGRAMS IN INSTITUTION
4. OPTIMAL PROGRAM SIZE
5. ACCREDITATION POTENTIAL
STEP 5. - ESTABLISH TIMING & DURATION
1. WHEN IS MANPOWER SURPLUS?
2. HOW LONG DOES SURPLUS LAST?
STEP 6. - RECOMMENDED ACTION(S) LOCATION(S)
STEP 7. - RECOMMENDED FUNDING ARRANGEMENT(S)

programs, we will define the minimum, optimal and maximum class program size for each training program. In addition, we will determine any constraints that affect optimal size, for example, availability of clinical placements.

Criteria #5 - Accreditation Potential

All health training programs are dependent on the interaction of government, faculty and professional bodies. In reviewing alternatives, particular attention must be paid to the working relationship with resource agencies. Members of the health community must ensure that students are receiving appropriate education, and that the training establishment meets certain minimum standards. We will therefore, examine each alternative in relation to minimum defined accreditation standards, as defined by the appropriate professional association, and approved by the provincial Government. For example, the Manual of Evaluation Requirements and Guidelines for Professional Optometric degree programs, (Council on Optometric Education) defines minimum standards for:

- university affiliation
- financial support
- plant and equipment
- library facility
- admission requirements
- curriculum
- faculty
- research

Criteria #6 - Potential For Expansion

In discussion with members of faculty and administration and government representatives we will assess the existing facilities and resources to estimate the potential of the institution for expansion. This will be in relation to plant, teaching resources and administrative support.

2.5 STEP 5 - ESTABLISH TIMING OF TRAINING PROGRAM REQUIREMENT

In this step, we are primarily concerned with the timing of manpower requirements to determine when training intervention is indicated, and whether there is a time limit for the requirement. Essentially we will answer three questions:

- When is the manpower requirement (by region and province)?
- How long does the requirement last?
- How long do current training arrangements last (i.e., training contracts)?

The answers to these questions will indicate the timing of the program alternative start up. In addition, the time duration of the manpower need will indicate whether the program alternative will be continuous, or interrupted. This may indicate the need to modify approach.

2.6 STEP 6 - RECOMMENDED ACTION(S)/LOCATION(S)

The sixth step in the decision process is to define the appropriate recommended action(s) and location(s) to meet the defined net manpower requirement. The five preceding steps are designed to narrow down a number of alternatives to a basic set of choices. This process may result in the recommendation of one specific institution or campus. Alternatively the approach may present a limited number of alternatives as a basis for decision making.

2.7 STEP 7 - RECOMMENDED FUNDING ARRANGEMENTS

The final step in the decision process is to define the recommended funding arrangements resulting from the indicated training actions and locations (Step 6, above). The principles for funding alternatives are outlined in Section 3.0 below, and in this step we will apply these principles to the recommended training action to develop funding recommendations.

2.8 THE DECISION PROCESS TO EVALUATE TRAINING ALTERNATIVES FOR SURPLUS MANPOWER

Exhibit 2, opposite, shows the decision process for a surplus of manpower. The same basic approach is used as in the decision process for a net manpower requirement.

2.8.1 STEP 1 - ANALYSIS OF MANPOWER SURPLUS

In Step 1, the manpower requirements analysis may indicate a surplus of manpower, and will identify the major sources of manpower supply. The analysis of these inputs will indicate whether this surplus results from large numbers of people entering the occupation from basic training, from immigration and migration, as a result of upgrading from other occupations, or by returning to the active from the inactive labour force. Alternatively, the manpower surplus may be caused by reduced demand, or as a result of changes in productivity.

The basic question in Step 1 is:

- Why is there a surplus of manpower in this occupation?

The analysis of causes of the manpower surplus will indicate alternatives for modifying certain types of training.

2.8.2 STEP 2 - THE IDENTIFICATION OF APPROPRIATE TYPE(S) OF TRAINING

This step identified the type of training related to the source of surplus manpower. The identified type of training could potentially be regulated or controlled to minimize the increase in training output and to reduce the surplus manpower.

The three types of training are:

- Refresher
- Upgrading
- Introductory Skills

These have been defined in Section 2.2, above. In Step 2 of the decision process for surplus manpower, the potential type of training to control is identified. Potentially any combination of the three types of training might be indicated, dependent on the occupation and province. Each type of training will be analysed independently through the subsequent steps in the decision process.

2.8.3 STEP 3 - THE DEFINITION OF ALTERNATIVE TRAINING ACTIONS/ TRAINING LOCATION

Having identified potential types of training for regulation/ control, we will review existing training programs/arrangements, and determine appropriate actions to reduce the supply of manpower. The first question is:

- Does this type of training program exist in Western Canada?

The input into the decision process will be the analysis of existing training programs in Western Canada.

Dependent on the current availability of training in Western Canada, the decision process branches into two sub-decision tables. These are discussed separately.

Training Programs Exist In Western Canada/Province

Where training programs for the type of training under review exist in Western Canada/Province, we consider three potential alternative actions:

- reduce size of existing programs
- close programs
- consolidate programs

Reduce Size of Existing Programs

In this component of the decision process, we will determine the potential to reduce the size of existing programs. This will be evaluated by considering the following factors:

- the number enrolled in the program in relation to minimum, optional and maximum size for program

We will answer the basic question:

- Can we reduce the size of the program without affecting its viability?

Close Existing Programs

In this component, we will determine the potential to close exisiting programs. This will be evaluated by considering the following factors:

- the number of programs existing in Western Canada/Province
- the number enrolled in the program in relation to minimum, optimal, maximum size of program
- attrition during training

We will answer two basic questions

- Is this program viable?
- What will happen to the manpower supply in the province/ region, if it is closed?

Consolidate Existing Programs

The third alternative action results from considering reduction or closure of existing programs. The potential for consolidation will be evaluated by considering the following factors:

- the number of programs in Western Canada/Province
- the number enrolled in the program in relation to minimum, optimal, maximum size of the program

We will answer one basic question:

- Can we combine, or consolidate existing programs?

The selection of alternative actions will depend on the number of existing training programs in Western Canada/Province, within the type of training selected, and the number of surplus personnel. The sequence outlined is dictated by the ease of each action. Dependent on the number, and size of existing training programs any combination of the three options may be possible.

Training Programs That Do Not Exist In Western Canada/Province

Where training programs for the type of training under review do not exist in Western Canada/Province we consider two potential alternative actions:

- Decreasing or closing contracted training places
- Reducing or stopping bursaries

Decreasing or Closing Contracted Training Places

In this component of the decision table, we will evaluate the potential to either decrease or close existing contracts for places in training programs external to the Western Provinces. For each occupation training program, we will determine:

- if training programs exist in Canada
- if there are current training contracts between Western Provinces and the host provinces
- the terms of the contract, including length of agreement, and the cancellation options
- how many places should be reduced to affect the surplus of manpower

Reducing or Stopping The Number of Bursaries

We will evaluate the potential to either reduce or stop the number of bursaries for the occupation. For each occupation we will determine:

- the number of existing bursaries
- the effect of removing incentives to encourage the individual to return to practice in the province granting the bursary.

For each type of training program, we will determine the potential for reducing the surplus manpower through the two steps outlined above.

2.8.4 STEP 4 - THE EVALUATION OF ALTERNATIVES

The fourth step in the decision process is to evaluate the alternative locations identified where actions could reduce the training output and therefore reduce the surplus manpower. In this step, we evaluate each alternative against the general criteria discussed in Section 2.4 above.

2.8.5 STEP 5 - ESTABLISH TIMING FOR TRAINING PROGRAM CUTBACK

In this step, we are primarily concerned with the timing of the manpower surplus to determine when the training intervention is indicated, and whether there is a time limit for the surplus. We will answer three questions:

- When is the manpower surplus (by region and province?)
- How long does the surplus last?
- How long do current training arrangements last? (i.e., training contracts)

The answers to these questions will indicate the timing for training program cutbacks.

2.8.6 STEP 6 - RECOMMENDED ACTION(S)/LOCATION(S)

The sixth step in the decision process is to define the recommended action(s)/location(s) to reduce the defined manpower surplus. The five preceding steps are designed to narrow down a number of alternatives to a basic number of choices.

2.8.7 STEP 7 - RECOMMENDED FUNDING ARRANGEMENTS

The final step in the decision process is to apply the funding principles defined in Section 3.0, below, to the recommended action(s), to develop funding recommendations.

3.0 PRINCIPLES FOR FUNDING ALTERNATIVES

The specific funding alternatives will be dictated by the training strategy determined as a result of net requirements, and the evaluation of alternative locations/training arrangements. Broad principles have been defined for interprovincial funding arrangements. Essentially these arrangements must be developed to cover:

- program development, start up costs and capital costs
- ongoing operational and administrative overhead costs

There are three principles to be used in the development of alternative funding arrangements. These are discussed below.

3.1 Principle #1 - Equity of Cost Sharing

The concept of equity should underly any interprovincial cost sharing arrangements for training programs. Costs should include both program development, start up costs, and capital costs as well as operational and administrative costs.

All costs should be allocated based on the proportion of training places used by each province.

3.2 Principle #2 - Administrative Ease

The funding arrangements should be based on a simple formula approach to allow for ease in administration. Complex formula/indicies may prove to have limited value, in that the administrative complexity outweighs the benefit of precise cost sharing.

3.3 Principle #3 - Length of Agreement

Dependent on the nature of the program, the length of the training agreement for interprovincial training programs should also be a factor. In order to ensure continuity and to form a sound basis for program development, initial contracts and new/start up programs should have a minimum duration of five years.

Province of
British Columbia

Province of
Alberta

Province of
Saskatchewan

Province of
Manitoba

WESTERN CANADA
HEALTH MANPOWER TRAINING STUDY

Section II - Report D

POPULATION

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JANUARY, 1981

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1.0 POPULATION

1.1 INTRODUCTION

One of the most important determinants of health manpower requirements is population. Within that variable, a number of factors interact and define the exact level and nature of those requirements. These factors are the age-sex structure, the geographical distribution and the actual size of the population.

The relationship between health manpower requirements and the population's composition with respect to age and sex has been examined repeatedly through epidemiological studies. Certain health conditions and illnesses have been shown to disproportionately affect specific age-sex cohorts. Thus, changes in the demographic makeup of the population are likely to influence the overall morbidity of the area in question, and consequently the type and number of health manpower required.

The geographical dispersion or concentration of population have important ramifications for the delivery of health care. Like other services, the economic provision of health care is dependent on the existence of a sufficient base population to make individual practices viable, and to render the establishment of health institutions practical. Unlike other services, health care services are not inherently desired of themselves, but rather for the state of good health they help provide. There are preventive and urgency aspects to health care delivery which further complicate the importance of accessibility in a geographic setting.

TABLE 1.1

ESTIMATED POPULATION BY AGE AND SEX 1976

(IN THOUSANDS)

Age Category	British Columbia		Alberta		Saskatchewan		Manitoba	
	Male	Female	Male	Female	Male	Female	Male	Female
01-04	88.6	84.6	78.4	74.5	38.0	36.7	42.5	39.8
05-09	99.2	94.8	83.5	79.5	39.9	38.1	43.3	41.6
10-14	116.2	111.7	95.6	91.6	48.6	46.8	49.8	48.0
15-19	121.0	116.9	99.0	94.3	49.4	47.5	51.0	49.3
20-24	110.3	111.2	94.6	91.4	41.7	39.7	47.0	47.0
25-29	110.5	108.4	84.3	80.9	33.4	31.7	42.6	41.7
30-34	90.3	86.6	65.7	63.1	25.9	25.0	33.1	32.3
35-39	74.1	70.6	53.6	51.7	22.7	22.4	27.0	26.4
40-44	70.7	64.5	52.4	48.1	25.2	22.5	26.0	25.4
45-49	69.2	65.4	49.7	46.1	24.1	23.7	25.7	26.1
50-54	65.2	68.9	43.5	44.1	24.5	24.6	26.2	28.5
55-59	55.5	61.6	36.1	36.8	22.8	23.4	23.6	25.2
60-64	51.9	56.8	30.2	31.4	21.3	21.6	22.2	23.5
65-69	40.7	44.2	23.9	24.6	17.4	17.4	17.5	19.3
70-74	30.4	32.6	18.4	18.7	13.0	13.2	13.0	15.0
75 over	38.9	55.3	23.5	28.9	18.9	22.4	17.4	24.4
Total	1,232.7	1,234.1	932.4	905.7	464.8	456.6	508.0	513.5

Source: Statistics Canada, Catalogue No. 92-823, Table 13

Without an even distribution of population, health care planners must decide on the appropriate or necessary level of care to be supplied for differing concentrations of population. The geographic organization of the health delivery system will impact the number and the mix of health professionals required to provide institutionalized and ambulatory services. The greater the disparity between urban and rural population numbers, the less economic and efficient it becomes to offer a standardized level of care geographically. In addition, a highly skewed population distribution will create labour retention and mobility problems for smaller settlements, given the propensity of professionals to prefer urban environments.

1.2 CURRENT AND PROJECTED DEMOGRAPHIC CHARACTERISTICS OF THE WESTERN PROVINCES

1.2.1 Highlights of Current Population

The age and sex distributions within the four Western Provinces differ significantly in a number of respects; Refer to Table 1.1, opposite. Of the four provinces, British Columbia exhibits the most mature age distribution. Specifically:

- the proportion of population in the younger age groups (01 to 24) is lower than that of the other three provinces.

- for the age groups 30 to 54, British Columbia is characterized by a higher percentage of its population bounded by this category than for the other provinces.

- the population aged over 55 is lower as a percentage, than Saskatchewan and Manitoba, but higher than Alberta.

In contrast to British Columbia, the age distribution of Alberta's population is the youngest of the Western Provinces. Less than 57% of Alberta's population is under 30, relative to 52% in British Columbia, 53% in Saskatchewan and Manitoba. Only 20% of Alberta's population is distributed in the age bracket 50 and over, whereas in British Columbia, Saskatchewan and Manitoba, 24%, 26% and 25% respectively of the population is contained by that age group.

Saskatchewan and Manitoba have similar population age structures characterized by:

- 53% of the population less than 30 years old.

- the greatest proportion of people older than 50 in the four Western Provinces.

With the exception of Alberta, the Western Provinces have similar distributions of population with respect to age. Alberta's younger population profile is attributable to the high level of in-migration which has sustained since 1974.

Typically, a migrant population is characterized by a large proportion of young people and children. A continuous period of in-migration will thus increase the relative size of the younger age-cohorts, if it is not offset by equivalent flows of out-migration.

The existing age-sex structure in each province of the Western Region implies the need for a certain combination of health manpower and facilities. In addition, the socio-economic and environmental conditions in each province also dictate the type of health delivery system required. In undertaking projections of future population, the existing age structure and the expected evolution of the socio-economic climate will bear heavily on the resulting estimates.

1.2.2 Projected Levels of Population

The population projections adopted for the four Western Provinces have been derived by different groups in the provincial and federal governments, using a variety of projection models and assumptions. For the purposes of this study, three possible scenarios of population growth were required in order to ascertain the sensitivity of the results to varying sizes of population. The specific projections chosen for each province, and the underlying assumptions are described below.

There are many versions of projected population in each province, based on various information sources from family

TABLE 1.2
POPULATION PROJECTION, ASSUMPTIONS, BY PROVINCE, BY SCENARIO

Assumption	Scenario	BRITISH COLUMBIA	ALBERTA	SASKATCHEWAN	MANITOBA
MORTALITY	High	Life expectancy rises till 1986, and then stabilizes at 70.47 for males and 79.33 for females.	Mortality projections are done on a quinquennial interval basis using life tables. Life expectancy levels off after 1986.	Life expectancy rises to 71.34 for males and to 82.90 for females by the year 2002.	Life expectancy rises till 1986, and then stabilizes at 70.47 for males and 79.33 for females thereafter.
	Medium	Same as above.	Same as above.	Same as above.	Same as above.
	Low	Same as above.	Same as above.	Same as above.	Same as above.
FERTILITY	High	Fertility rate rises to 2.0 births per woman by 1991 and stabilizes thereafter.	Rate rises from 2.13 in 1976 to 2.304 by 1985, and stabilizes thereafter.	Rate rises from 2.27 births per woman in 1977 to 2.30 in 2002.	Rate stabilizes at 1976 level of 2.1 births per woman.
	Medium	Rate stops declining, rises to 1.83 births per woman by 1991, and stabilizes thereafter.	Rate stabilizes at 1976 level of 2.11 births per woman.	Rate declines to 2.04 births per woman by the year 2002.	Same as above.
	Low	Rate declines to 1.6 births per woman by 1991 and stabilizes thereafter.	Rate continues to decline to 1.914 births per woman in 1985 and stabilizes thereafter.	Rate declines to 1.81 births per woman by the year 2002.	Rate declines to 1.8 births per woman in 1991, and stabilizes thereafter.
INTERPROVINCIAL MIGRATION	High	Net total migration rises to 36,900 in 1986 and declines to 35,000 per year from 1991 on.[1]	Net migration increases to 34,800 persons per year by 1987 and stabilizes thereafter.	Net total migration rises to 11,168 people per year by the year 2002.[1]	Net total migration declines from -1000 people in 1976 to -1700 in 1991, stabilizing thereafter.[1]
	Medium	Net increases to 22,500 migrants per year in 1982 declining to 17,500 per year by the year 2000.	Net migration derived from econometric model that projects the population impact of two major Alta projects.	Net total migration rises to 5,200 people per year in 1983, and stabilizes thereafter.[1]	Net total migration declines from -1400 to -2700 over 1976-1991, and thereafter stabilizes.[1]
	Low	Net total migration rises to 24,600 in 1986, and declines to 24,300 per year from 1991 on.[1]	Net migration declines to 7,000 persons per year and stabilizes thereafter.	Net total migration over the forecast period is zero.[1]	Net total migration rises from -1500 in 1976 to -500 in 1991, stabilizing thereafter.[1]
INTERNATIONAL MIGRATION	High	Same comment as for interprovincial migration.[1]	Net increases of 12,500 migrants annually, 1976 to 2000.	Same comment as for interprovincial migration.[1]	Same comment as for interprovincial migration.[1]
	Medium	Net increases of 12,500 migrants annually, 1976 to 2000.	Same as above.	Same as above.[1]	Same as above.[1]
	Low	Same comment as for interprovincial migration.[1]	Net increases of 12,000 migrants per annum, 1976 to 2000.	Same as above.[1]	Same as above.1

allowance records to registered health care recipients. Each projection is subject to a number of problems relating to the accuracy of the information or the projection method. The population projections adopted in this study represent official provincial series published either by Statistics Canada or the appropriate provincial statistics agency.

British Columbia. The Central Statistics Bureau of the Ministry of Economic Development undertakes population projections using Statistics Canada's component model. Under this approach, separate projections for each component of population change are established, that is, fertility, mortality and migration. A series of rates and ratios are applied to the base population in order to determine that projected population for the following years.

Projection 51 represents British Columbia's official version of its most likely growth scenario; and it is thus adopted here on that basis. Since the Central Statistics Bureau does not provide any other versions of its province's projected population, Statistics Canada's Projections 3 and 1 are assumed for the low and high scenarios respectively. Table 1.2 contrasts the assumptions of each projection, by province.

Alberta. The Alberta Bureau of Statistics publishes several series of projections which represent the professional judgements of representatives from various Alberta government departments and agencies, about appropriate assumptions and methodology. The projections are derived through an age-cohort survival model where births, deaths, and net migration are added or subtracted to the based population, in the form of survival ratios, fertility rates and number of migrants. The model can distinguish between the age-sex composition of the migratory population and that of the general population.

Nine sets of projections are derived using a constant mortality assumption. Series vary due to the different underlying assumptions regarding fertility and net migration.

Series 4 is adopted in this study to represent the most likely scenario of population growth. Series 3 and 8 represent respectively, the low and high rates of development. Series 4 is estimated using migration Set C which has been derived by Alberta Advanced Education and Manpower through an econometric model that incorporates the impact of two major projects on the Alberta economy.

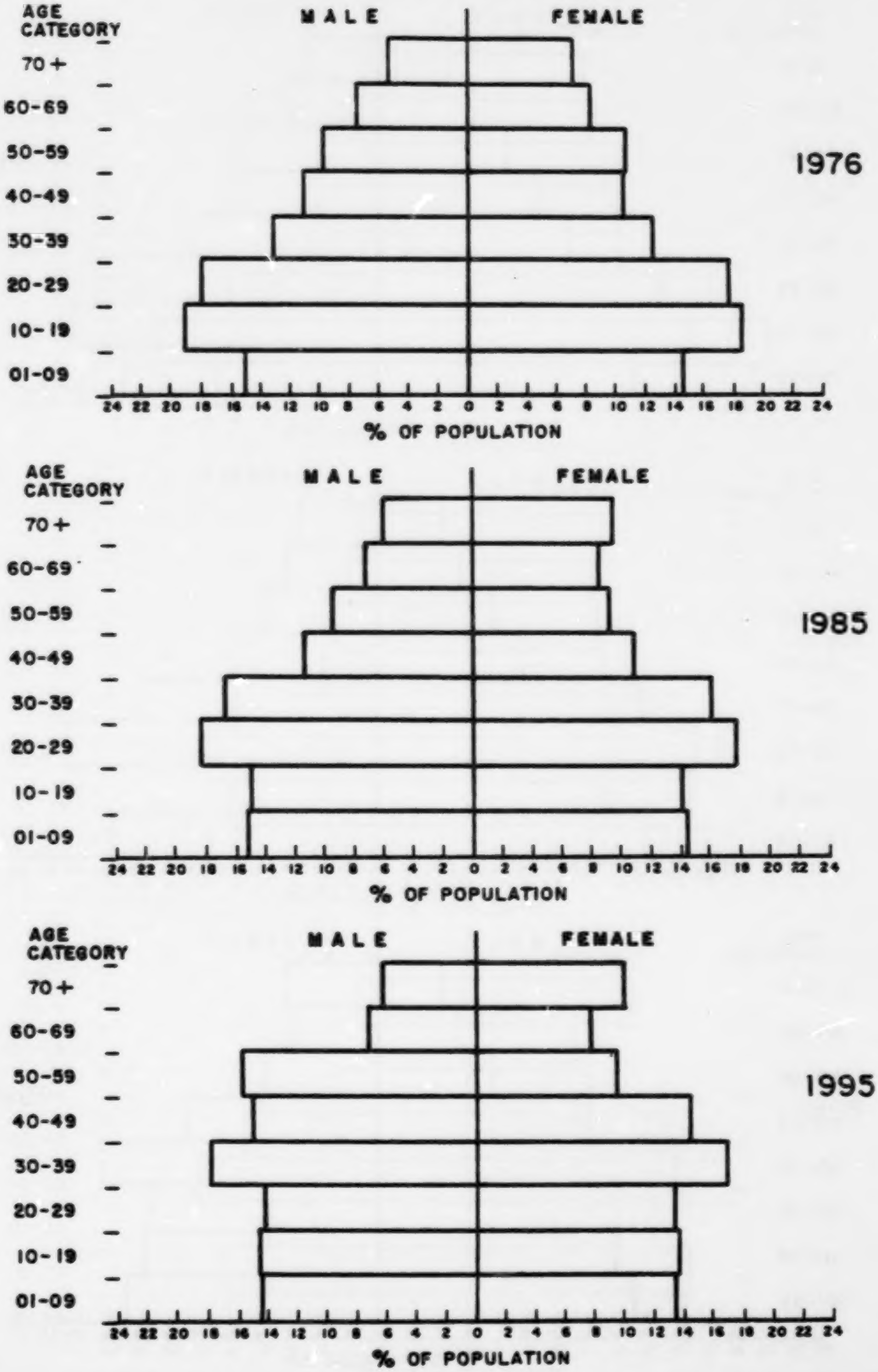
Series 3 is based on migration Set B which projects population linearly from 1976 to 1977, with an assumed decline in net interprovincial migration after 1986 to 1987. Series 8 assumes migration Set A, of a continued increase in interprovincial migration to 1987 and a stablization thereafter.

Saskatchewan. The Saskatchewan Bureau of Statistics undertakes population projections for its province, using an age-cohort survival technique similar to Alberta's. The Bureau generates twelve sets of projections with varying assumptions pertaining to fertility and migration. Only one survival ratio is assumed for all projection series.

FIGURE 1.1

AGE-SEX DISTRIBUTIONS OF PROJECTED POPULATION

BRITISH COLUMBIA

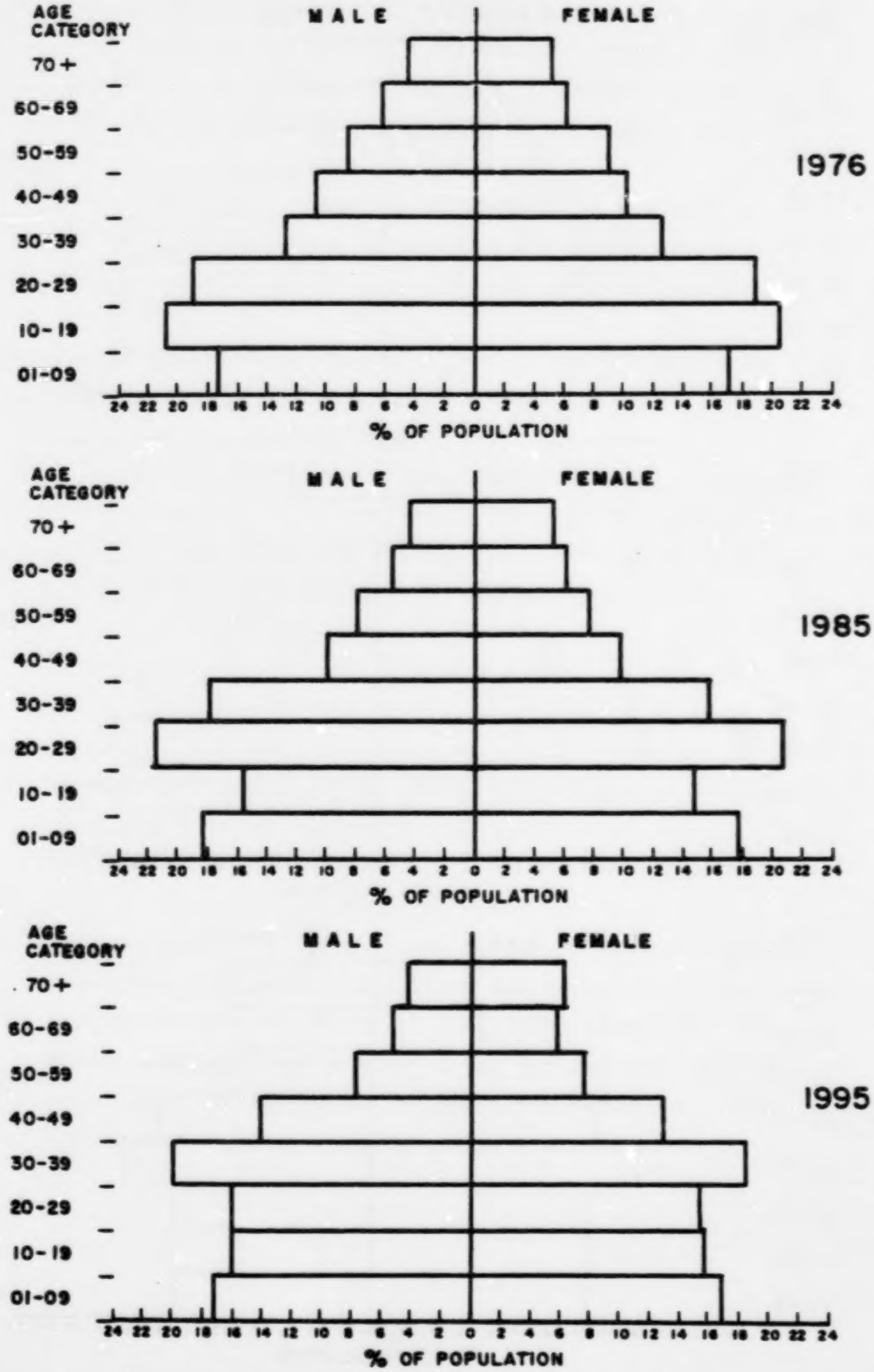


Source: British Columbia Ministry of Economic Development, Central Statistics Bureau Projection 51, 1985, and 1995. Statistics Canada. Estimated Population. No. 91-202, 1976.

FIGURE 1.2

AGE-SEX DISTRIBUTIONS OF PROJECTED POPULATION

ALBERTA

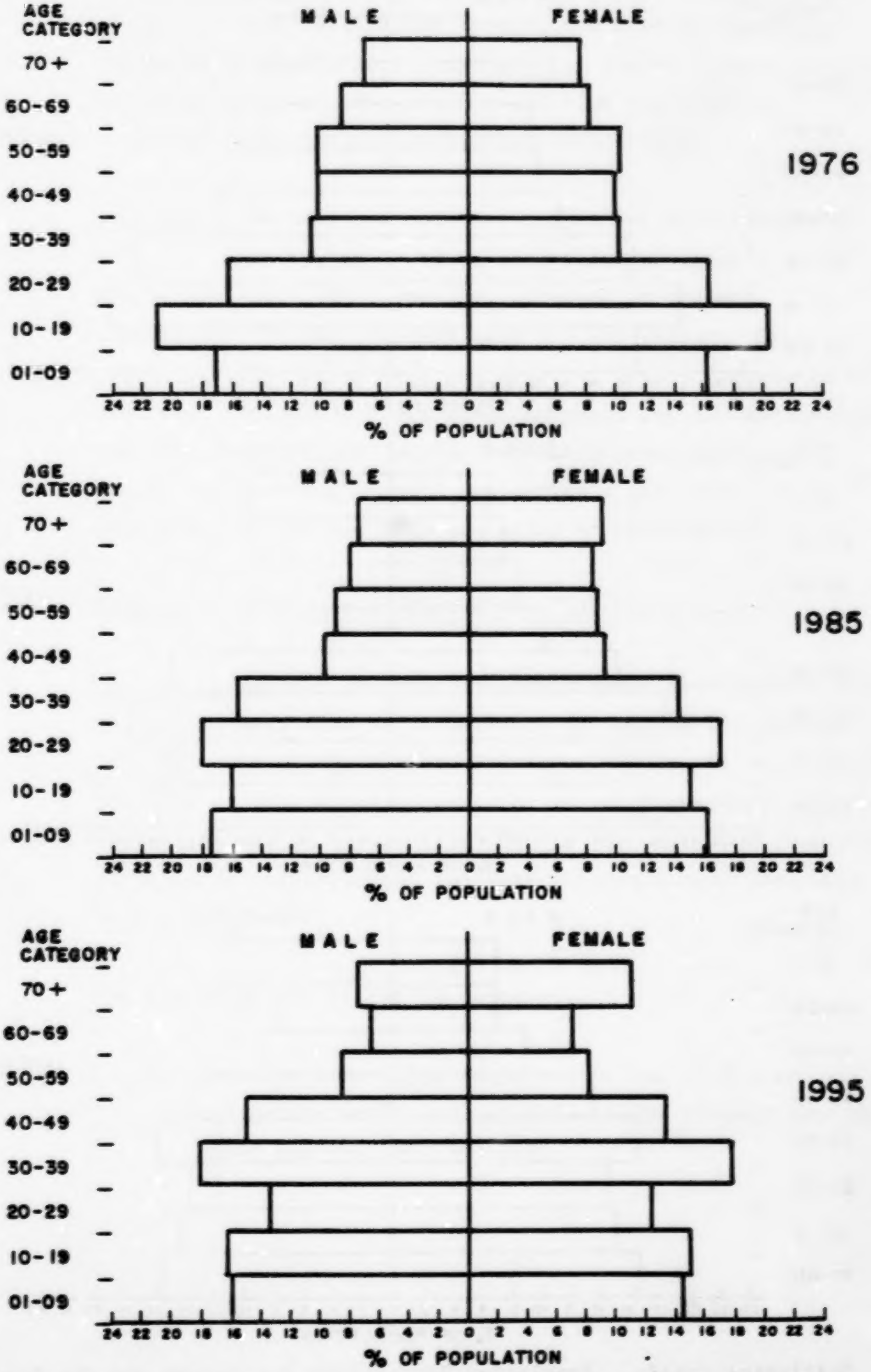


Source: Alberta Treasury, Bureau of Statistics. Population Projections, Alberta 1977-1991. Series 4, 1985 and 1995. Statistics Canada. Estimated Population No. 91-202, 1976.

FIGURE 1.3

AGE-SEX DISTRIBUTIONS OF PROJECTED POPULATION

SASKATCHEWAN

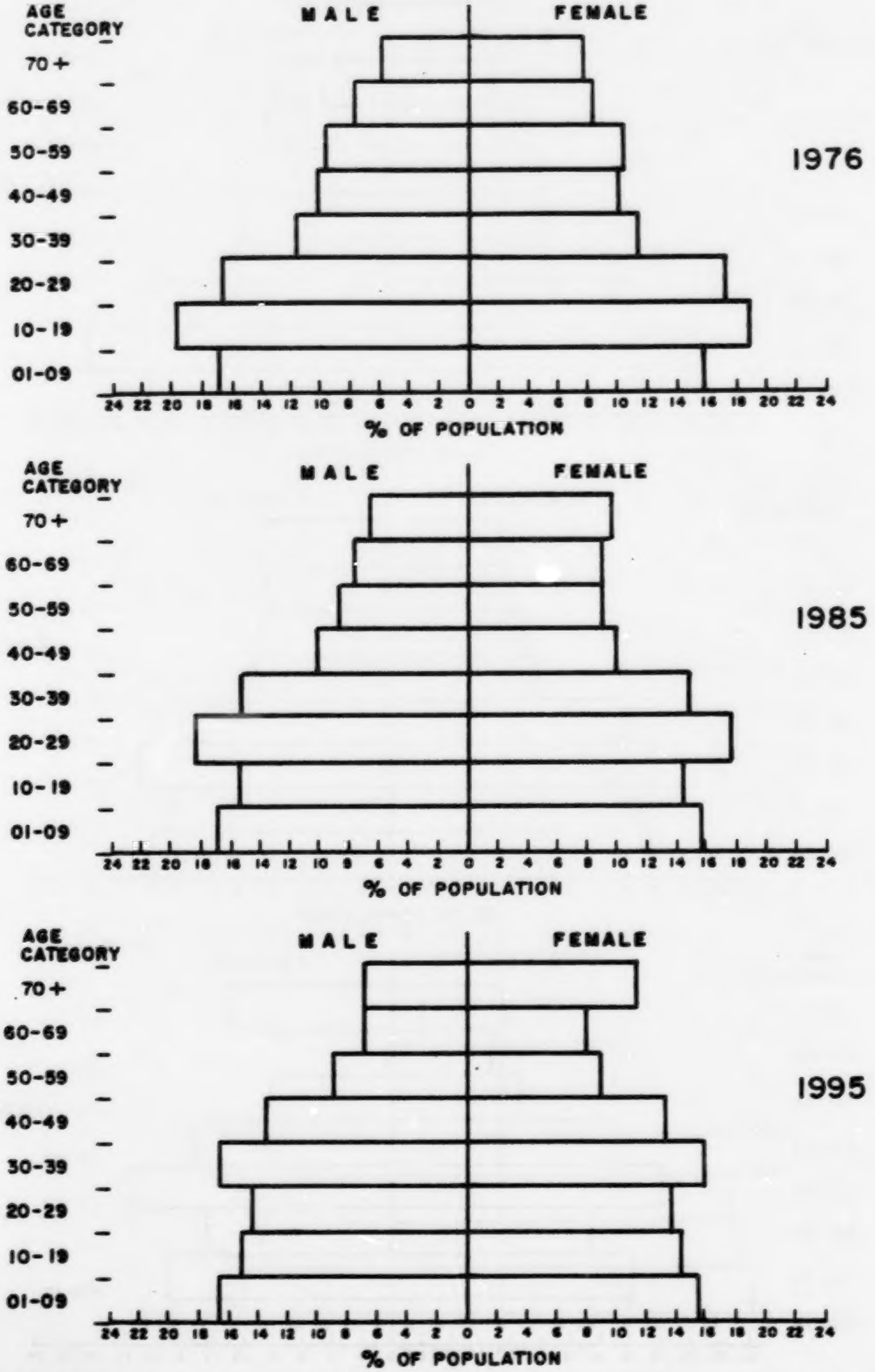


Source: Saskatchewan Executive Council, Bureau of Statistics, Projection 13, 1985 and 1995. Statistics Canada. Estimated Population. No. 91-202, 1976

FIGURE 1.4

AGE-SEX DISTRIBUTIONS OF PROJECTED POPULATION

MANITOBA



Source: Statistics Canada. Population Projections for Canada and the Province, 1976-2001. Projection 1, 1985 and 1995. No. 91-520 Statistics Canada. Estimated Population of Manitoba. No. 91-202, 1976

The Bureau identifies Projection 13 as its official version of likely future population growth; the same series is therefore adopted here on that basis. Projections 12 and 1 are chosen to represent the low and high scenarios of projected Saskatchewan population respectively.

Manitoba. The Manitoba government does not undertake in an official capacity, any projections of its province's population, although currently, attempts to project population from medical care data are proceeding. Statistics Canada provides seven sets of projected population growth in Manitoba. Projection 1 is taken to represent the medium and therefore, most likely series for anticipated population growth. Projections 4 and 2 respectively are chosen to represent the low and high scenarios of development.

1.2.3 Highlights of Projected Population Characteristics

Age-Sex Pyramids. The evolving demographic structure of the population over time is illustrated in Figures 1.1 through 1.4, for each of the Western Provinces, under the most likely scenario of population growth, for 10 year intervals. The projection period is actually 1980 to the year 2000, but for purposes of illustration, ten year intervals have been used in the graphs.

The following points can be observed:

- The baby boom bulge indicated in the 10-29 year old age groups works its way through the pyramid into the 30-49 age brackets by 1995.

TABLE 1.3

URBAN, RURAL NON-FARM AND RURAL FARM POPULATION,

BY PROVINCE, 1971 1976

		BRITISH COLUMBIA		ALBERTA		SASKATCHEWAN		MANITOBA	
		Number	%	Number	%	Number	%	Number	%
URBAN	1971	1,654,410	75.7	1,196,250	73.5	490,635	53.0	686,445	69.5
	1976	1,897,085	76.9	1,379,165	75.0	511,330	55.5	714,480	70.0
RURAL NON-FARM	1971	456,700	20.9	195,595	12.0	202,280	21.8	171,390	17.3
	1976	525,950	21.3	269,225	14.7	217,425	23.6	205,570	20.1
RURAL FARM	1971	73,515	3.4	236,630	14.5	233,335	25.2	130,410	13.2
	1976	43,575	1.8	189,650	10.3	192,570	20.9	101,455	9.9
TOTAL	1971	2,184,625	100.0	1,627,875	100.0	926,250	100.0	988,245	100.0
	1976	2,466,610	100.0	1,838,040	100.0	921,325	100.0	1,021,505	100.0

Source: Statistics Canada, Catalogue Nos. 92-709, 92-807

- The relative size of the younger age groups 01-19 diminishes appreciably in all provinces, although the extent of decline is less significant in Alberta.

- In British Columbia and Manitoba, the older age groups remain proportionately stable relative to the total population from 1976 to 1995. Alberta and Saskatchewan experience a relative decline in the proportion of the total population contained by the 50 and over age categories.

- Overall, the future demographic profile indicated for the Western Region is that of a maturing total population. The full brunt of the baby boom effect on the older age groups will not be experienced before the years 2005 to 2015, which lie outside the time horizon adopted in this study.

1.3 URBAN-RURAL POPULATION DISTRIBUTION

Table 1.3, opposite, exhibits the dispersion of people in the Western Provinces by urban and rural areas, in 1971 and 1976. The planning implications of the present distribution of people relate to the inadequate population base, which cannot viably support the practice of independent health practitioners, nor the establishment of comprehensive health care facilities. The preliminary indications of future geographic dispersal suggest that the associated planning problems are currently at a maximum, and that future population distribution may favor the rural areas more than historically.[1]

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[1] Is Canada Going Back To The Land? Statistics Canada, Geography Series No. 11-GE079, Robert Parenteau, Spatial Delineation and Analysis Section, March, 1980.

Insofar as the net manpower requirement projections for this study are concerned, sub-provincial estimates have not been derived. Although for certain provinces, population projections are available at the census district level, it would be virtually impossible to project supply at this level of disaggregation. Sub-provincial manpower data does not exist in many instances, and furthermore, there is no method of assuring that future manpower will be willing to establish in rural areas to the same extent as historically.